

# South West Wetlands Monitoring Program 1977 – 2015



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Department of  
Parks and Wildlife



**Cover photograph**

Cameras used to photograph gauges and calibrate continuous depth recordings often take photos of native and introduced fauna, in this case a Red Fox *Vulpes vulpes* at Gingilup Swamp, 08May2014. © AG Clarke.

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## SUMMARY

This report presents 1977–2015 data from SWWMP, the *South West Wetlands Monitoring Program* conducted by the Western Australian Department of Parks and Wildlife (DPaW). Since 1997, this program has been funded under the WA Salinity Action Plan / Salinity Strategy as updated by the Government's response to the Salinity Taskforce report. In recent times SWWMP has become increasingly significant in the context of climate change. Rainfall is declining over much of the south-west and this is affecting many wetlands.

In this report, we present routinely-collected September and November water level, salinity and pH data to 2015. The data are presented in graphical form for 104 of the 105 currently-monitored SWWMP wetlands. Data concerning nutrients (not monitored beyond 2007) in these wetlands, and concerning water level, salinity, pH and nutrient concentrations in other, historically-monitored wetlands, may be found in an earlier report. Administrative information concerning all 158 SWWMP wetlands, their map coordinates, the periods during which each has been monitored, their locations in terms of DPaW Regions and Districts and Local Government Authorities (LGAs), and their tenure, is also presented.

This report provides a visual overview of the data that have been collected over the past thirty-eight years and ready-reference lists of the wetlands. This information will be useful for those with a responsibility or interest in the conservation and management of these and other wetlands in south-western Australia. Most of the monitored wetlands are within Nature Reserves or National Parks and DPaW is responsible for their management. Some are 'Ramsar' wetlands of international importance and many are nationally significant.

Researchers will also find the report useful as it identifies wetlands that have long periods of systematic monitoring of physico-chemical attributes, knowledge which will assist in the selection of most-suitable wetlands for study. Pronounced year-to-year or longer-term variations or trends are readily apparent in the graphs of some wetlands, as is the absence of pronounced variations or trends in others. The wetlands of SWWMP demonstrate a wide variety of hydrological responses to landscape setting, surface and groundwater catchment characteristics, local climates and, in some cases, management interventions.

Attention is drawn to a number of wetlands with 2015 water level, salinity or pH values close to or outside previously recorded limits. These are Ardath (LGA: Bruce Rock), 'Boat Harbour 1' (Denmark), Byenup (Manjimup), Clifton (Mandurah/Waroona), Coyrecup (Katanning), Crackers (Dandaragan), Davies (Augusta – Margaret River), 'Harvey 12632' (Harvey), Jasper (Nannup), McLarty (Murray), Mount Le Grand (Esperance), Nine Mile (Murray), Noobijup (Cranbrook), Shark (Esperance), Tordit-Gurrup (Manjimup) and Yarnup (Cranbrook).

Regional, District and specialist branch staff of DPaW are encouraged to examine the data for all wetlands in their respective areas of responsibility as other wetlands may also show changes of interest or management concern.

In previous annual reports, we have provided short descriptions of noteworthy changes, apparent trends, values at risk, etc., at wetlands of particular interest or concern. In order to reduce report preparation time, those descriptions have been omitted from this report.

2015 was again a year of mainly below average to very much below average rainfall in south-western Australia. As a consequence, water levels in many SWWMP wetlands remained low and salinities elevated. pH values of several wetlands, including Ramsar-listed Tordit-Gurrup, remained at or near historically low levels. Conversely, heavy rainfall in the northern agricultural area at the end of July / beginning of August caused some wetlands such as Logue, Eganu, Ninan and Campion to fill to their highest levels in more than a decade.

Since 2009, continuous water level recorders and tipping-bucket rainfall gauges have been installed on 15 high conservation value SWWMP wetlands between Cataby, 140km north of Perth, and Esperance, on the south-east coast. Collection of continuous water level and on-site rainfall data will enable salt and water balance models to be developed for these and other south-western Australian wetlands and may thereby assist in their conservation management. The data will also assist in development of an improved understanding of the likely consequences of predicted climate change, particularly ongoing rainfall decline, on the wetlands of south-western Australia. Since 2013, this more-intensive monitoring has been focused on and near the south coast, at key sites of the endangered Australasian Bittern.

This report is the ninth in a series of annual reports aimed at putting most-recent SWWMP data in front of readers as soon as possible after data collection.



## 1. INTRODUCTION

This report presents 1977–2015 data and other information from SWWMP, the *South West Wetlands Monitoring Program* conducted by the Western Australian Department of Parks and Wildlife (DPaW)<sup>1</sup> and its predecessors. Since 1997, this program has been funded under the Western Australian Salinity Action Plan (Government of Western Australia 1996a,b) and State Salinity Strategy (State Salinity Council 2000a,b) as updated by the Government's response (Government of Western Australia 2002) to the Salinity Taskforce report (Frost *et al.* 2001). A history of the program, a description of methods, and several trends analyses to 2000 may be found in Lane *et al.* (2004). Reviews of this and other programs under the Salinity Action Plan have also been published (Wallace 2001, Wallace *et al.* 2011, CCWA 2014).

In this report, we present, in graphical form, all September and November<sup>2</sup> water depth, salinity and pH data routinely collected from 104 of 105 currently-monitored<sup>3</sup> SWWMP wetlands. Data concerning nutrient concentrations<sup>4</sup> in most of these wetlands, and concerning water level, salinity, pH and nutrient concentrations in other, historically-monitored SWWMP wetlands, may be found in Lane *et al.* (2009a) and are not repeated here. The locations of all 158 current and historically-monitored SWWMP wetlands are shown in Figure 1. Administrative information concerning these wetlands, their map coordinates, the periods during which each has been monitored, their locations in terms of DPaW Regions and Districts and Local Government Authorities (LGA's), and their tenure, is also presented (Tables 1–3).

The main purposes of this report are to provide a visual overview of data that have been collected over the past thirty-eight years and ready-reference lists of the wetlands. This information will be useful for those with a responsibility or interest in the conservation and management of these and other wetlands in south-western Australia. Most of the monitored wetlands are within National Parks and Nature Reserves vested in the Conservation and Parks Commission<sup>5</sup> of Western Australia and DPaW is responsible for their management. Some are within current or former Natural Diversity Recovery Catchments (Government of Western Australia 1996a; Wallace & Lloyd 2008) (Table 5). Some are 'Ramsar' Wetlands of International Importance (Government of Western Australia 1990, 2000; Ramsar Secretariat 2013, AGWA 2006), and many are nationally significant 'Directory' Sites (ANCA 1996, Environment Australia 2001; Elscot *et al.* 2009) (Table 4).

Researchers will also find the report useful as it identifies wetlands that have long periods of systematic monitoring of physico-chemical attributes, knowledge which will assist in the selection of wetlands most-suitable for study. Pronounced year-to-year or longer-term variations or trends are readily apparent in the graphs of some wetlands, as is the absence of pronounced variations or trends in others. The wetlands of SWWMP demonstrate a wide variety of hydrological responses to landscape setting, surface and groundwater catchment characteristics, local climates and, in some cases, management interventions. Many are also exhibiting pronounced responses to the decline in annual rainfall that has occurred over much of south-western Australia since the 1970s (Hope *et al.* 2015).

## 2. RESULTS

In order to make this report available in a timely fashion, statistical trend analyses to 2015 have not been performed on the physico-chemical data presented here. Trends to 2000 of 41 SWWMP wetlands (those monitored for 20 or more years at that time) have previously been reported (Lane *et al.* 2004). A report on depth and rainfall trends of multiple groups of current and historical SWWMP wetlands over decadal and multi-decadal periods from 1981 to 2010 has recently been prepared (Lane *et al.* 2015c) and an update is proposed.

Without statistical analysis, it would be potentially misleading to present lists of wetlands that appear to show trends, as opposed to those that do not. On the other hand, it is considered useful to draw the reader's attention here to wetlands with 2015 water level, salinity or pH values that are close to or outside previously recorded limits.

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<sup>1</sup> DPaW commenced operations on 1 July 2013 following separation of the former Department of Environment and Conservation (DEC) into DPaW and the Department of Environment Regulation. DEC's predecessors with regard to SWWMP were the Department of Conservation and Land Management (CALM; 1985-2006) and the Department of Fisheries and Wildlife (pre-1985).

<sup>2</sup> And all routinely-collected January, March, May and July water depth, salinity and pH data. Many SWWMP wetlands were monitored at two month intervals from May 1981 to May 1985 and, in some cases, prior to this. Some (depth and salinity only) of these data have previously appeared in graphical form, in Jaensch *et al.* (1988).

<sup>3</sup> Currently monitored as at Nov 2015. Monitoring was discontinued at two wetlands, Hebitons and Goorly, at the end of 2009, thereby reducing the number of 'current' SWWMP wetlands from 103 to 101 and increasing the number of 'historical' wetlands from 49 to 51. At the end of 2010, monitoring was also discontinued at Blue Gum, Frasers and 'Esperance 27985', but in 2011 was resumed at Eneminga and initiated at Yeagarup and Yeagarup South, thus maintaining the number of 'current' SWWMP wetlands at 101 while increasing the number of 'historical' wetlands to 53. In 2012 monitoring was initiated at Big Boom and Gingilup. No changes were made in 2013. Kulunilup was added in 2014, at the request of Birdlife Australia, due to its significance for the threatened Australasian Bittern. Mowen was added in 2015. This increased the number of current SWWMP wetlands to 105 with the number of historical SWWMP wetlands unchanged at 53.

<sup>4</sup> Total nitrogen and total phosphorus, both filtered and unfiltered. These parameters have not been monitored beyond 2007.

<sup>5</sup> Appointed in May 2016 to replace the former Conservation Commission of Western Australia.

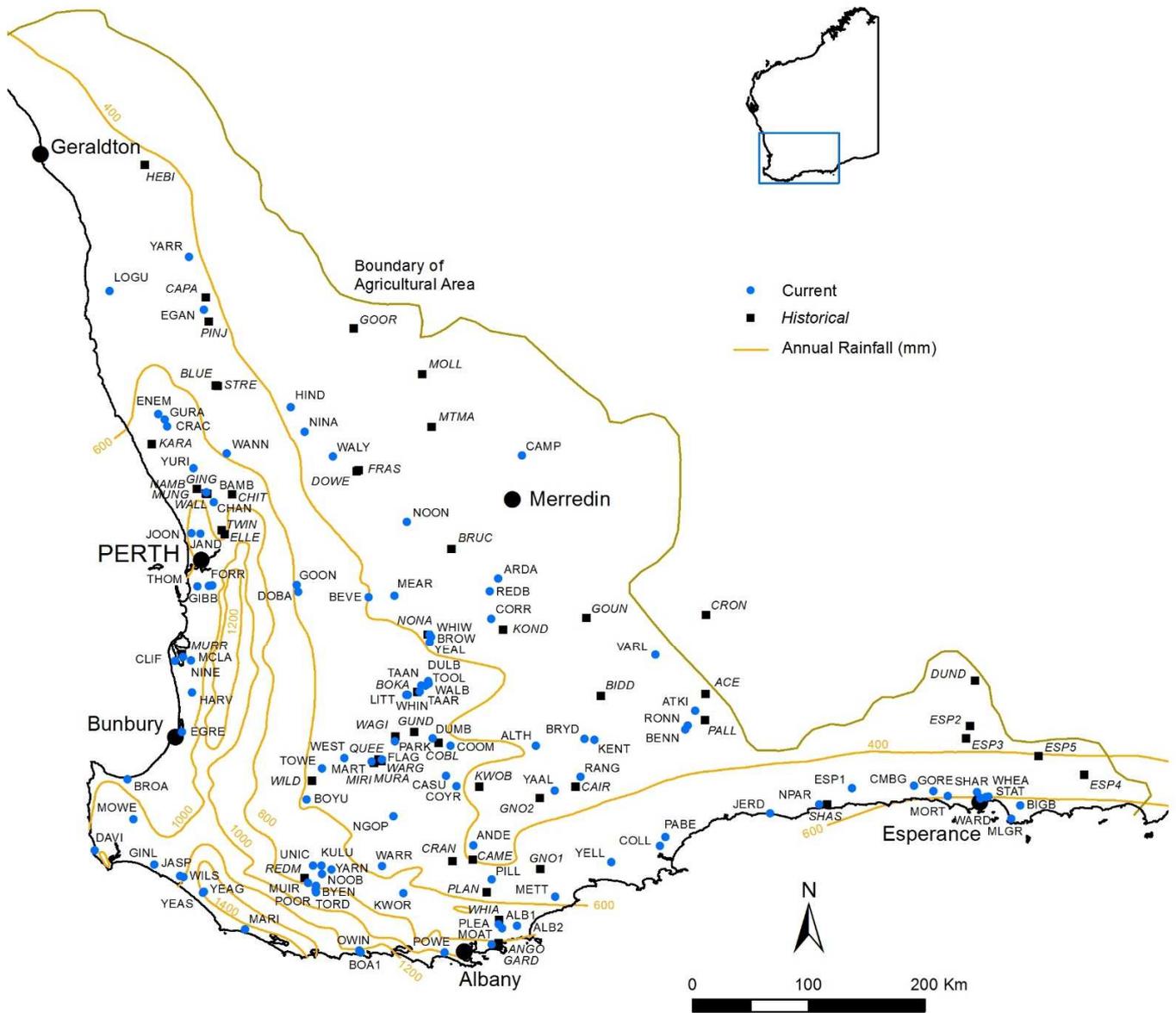


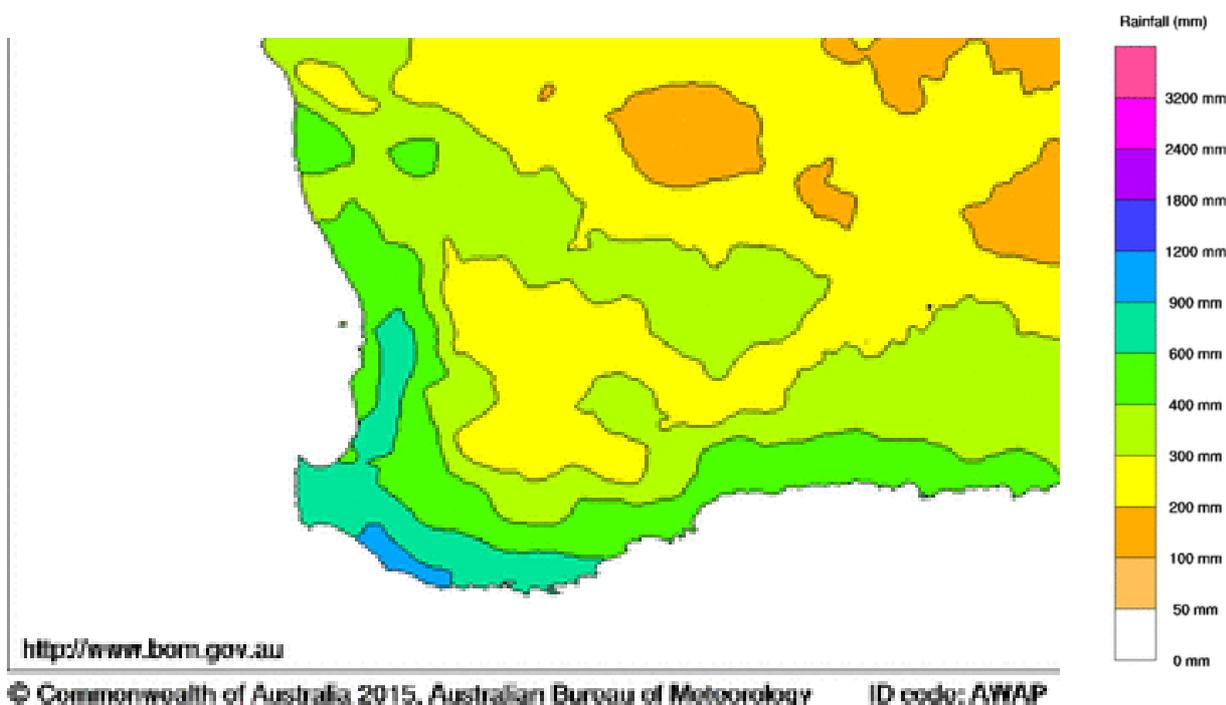
Figure 1. Wetlands currently (2015) and previously monitored under SWWMP.

These are listed below, with the relevant LGAs in brackets. The relevant data are presented graphically in the GRAPHS section of this report (p. 49 onwards), alphabetically by wetland name.

Ardath (Bruce Rock), 'Boat Harbour 1' (Denmark), Byenup (Manjimup), Clifton (Mandurah/Waroona), Coyrecup (Katanning), Crackers (Dandaragan), Davies (Augusta – Margaret River), 'Harvey 12632' (Harvey), Jasper (Nannup), McLarty (Murray), Mount Le Grand (Esperance), Nine Mile (Murray), Noobijup (Cranbrook), Shark (Esperance), Tordit-Gurru (Manjimup) and Yarnup (Cranbrook).

In previous annual reports we provided short descriptions of noteworthy changes, apparent trends, values at risk, etc., at wetlands of particular interest or concern. In order to reduce preparation time those descriptions have been omitted from this report. The maps and a short account of rainfalls have been retained.

Rainfalls in south-western Australia in the 12 months to 31<sup>st</sup> October 2015 ranged from <300mm to >900mm, with the highest falls being recorded on the western south coast (Fig. 2). Falls in the western half were, however, more than 100-200mm below the long-term average (Fig. 3). They were also >100mm below average east of Esperance, on the south coast. Large parts of the south-west received only 60-80% of average, with some parts receiving <60% (Fig. 4). Rainfalls in the western half of the south-west were mostly in the lowest 10% of recorded values (i.e. decile 1) (Fig. 5). Only some small areas in the eastern half of the south-west received above average falls (Figs. 3-5).



**Figure 2. Rainfall (mm) recorded in the 12 month period from 01 Nov 2014 to 31 Oct 2015**

Heavy rainfall occurred in a wide band across the north and a smaller band in the south at the end of July / beginning of August 2015 (Fig. 6). Falls were particularly heavy in the north, with Eneabba recording 95mm on 31<sup>st</sup> July and Coorow recording 54mm on 31<sup>st</sup> July plus 17mm on 1<sup>st</sup> August<sup>1</sup>. Wongan Hills had its highest daily rainfall on record (86mm) on 31<sup>st</sup> July, plus 11mm on 1<sup>st</sup> August. Merredin, which also recorded unusually heavy and unseasonal rainfall in March 2015 (45mm on the 2<sup>nd</sup>), received 33mm on 31<sup>st</sup> July plus 37mm on 1<sup>st</sup> August.

As a consequence of these particularly heavy falls, several northern SWWMP wetlands had higher water levels in 2015 than in preceding years. Logue (near Eneabba), for example, while nowhere near full, had its highest Sept & Nov 2015 water levels since 2003 (see GRAPHS section). Eganu (near Coorow) filled to its highest levels since 1999. Ninan (near Wongan Hills) filled to its highest since 2003 and Hinds (also near Wongan Hills) partially filled to its highest since 2000–2001. Campion (40km N of Merredin) rose to its highest water levels since 1999. No doubt due in large part to dilution, the water level increases at these wetlands (except at freshwater Logue) were accompanied by some substantial decreases in salinity.

<sup>1</sup> Note that all rainfalls are to 0900hs on the reported day.

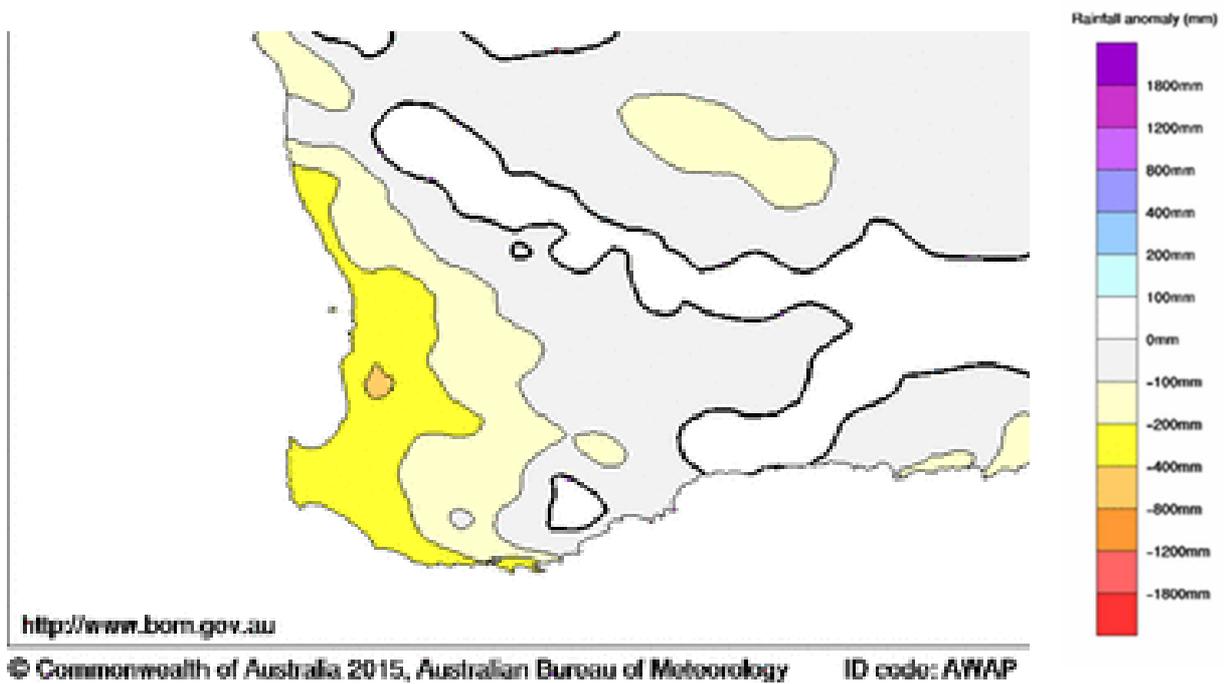


Figure 3. Rainfall anomalies (mm above or below average) in the 12 month period from 01 Nov 2014 to 31 Oct 2015

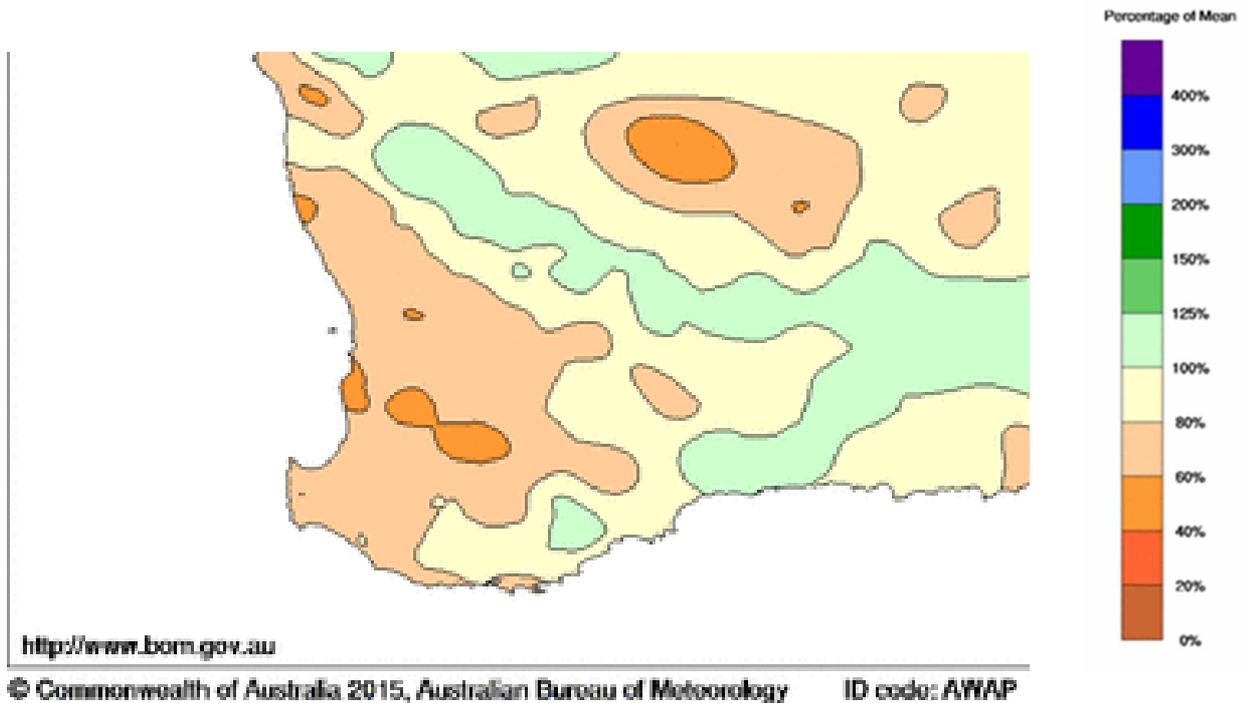


Figure 4. Rainfall percentages for the 12 month period from 01 Nov 2014 to 31 Oct 2015.

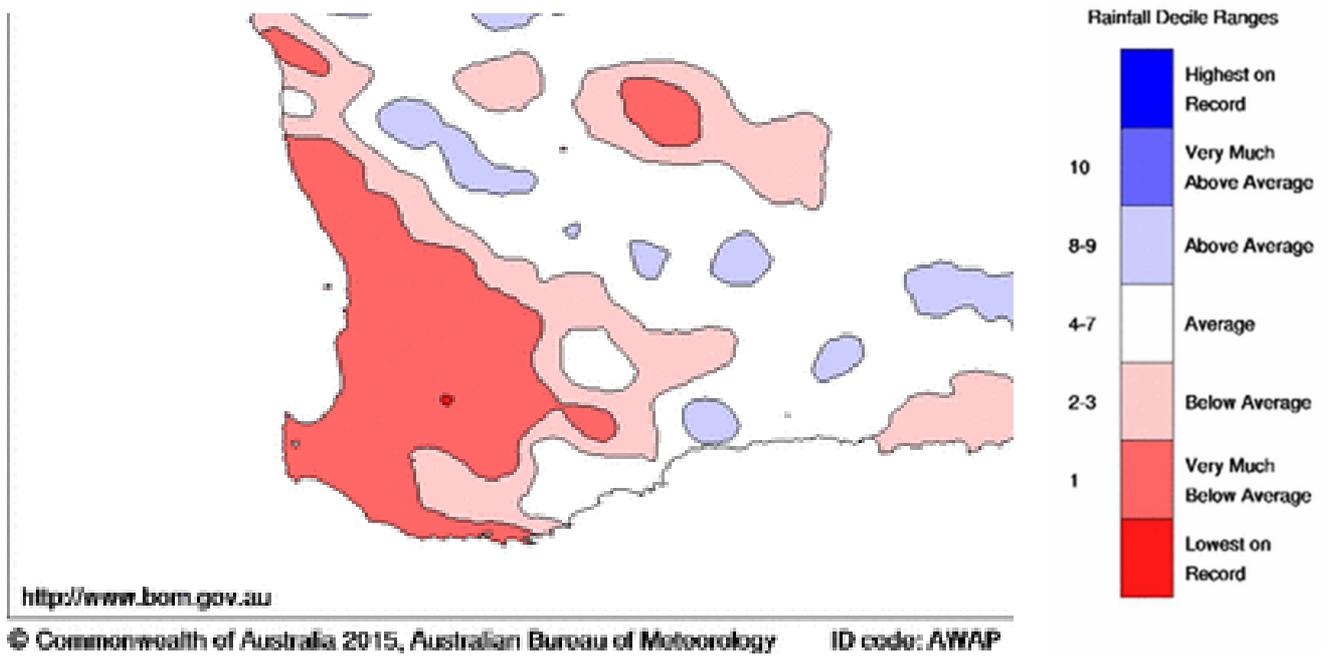


Figure 5. Rainfall deciles for the 12 month period from 01 Nov 2014 to 31 Oct 2015.

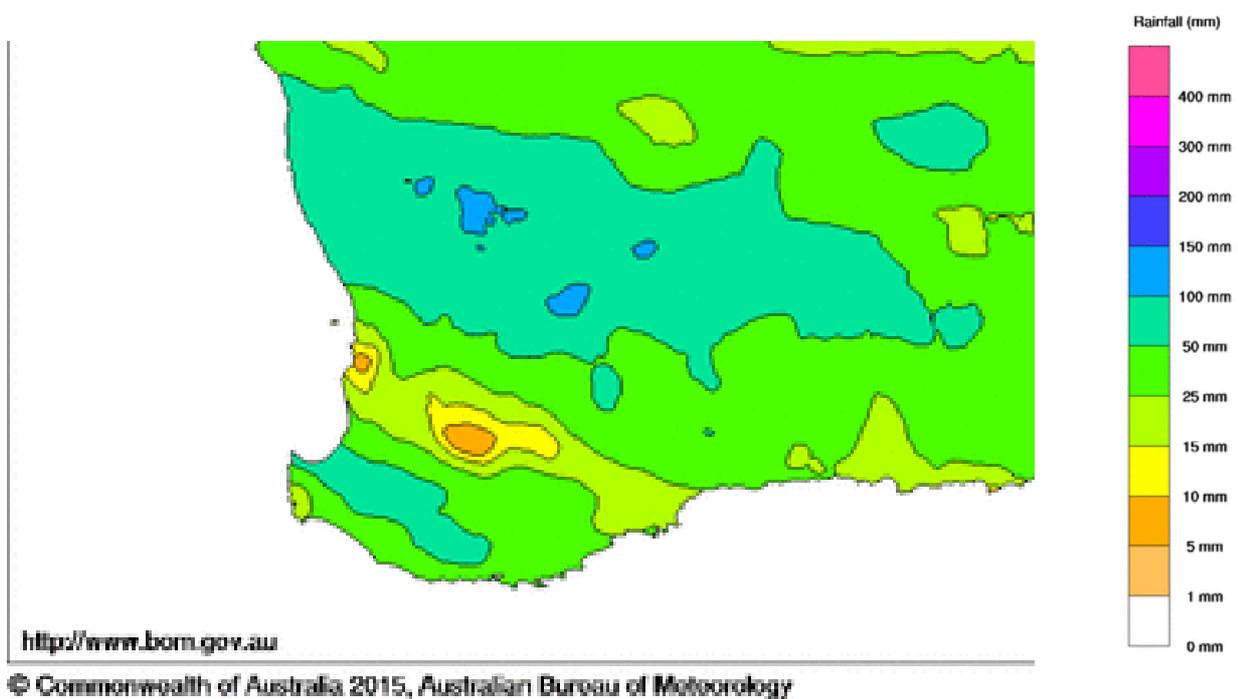


Figure 6. Rainfall (mm) recorded in the week 27<sup>th</sup> July to 3<sup>rd</sup> August 2015

Readers are encouraged to view all Graphs (Albany 26385 to Yurine) of this report for changes of possible interest or concern and perhaps for reassurance that, 38 years since commencement of SWWMP, while many wetlands are being impacted by declining rainfall, some clearly remain in good condition, at least in terms of the monitored key parameters.

Regional, District and specialist branch staff of the Department of Parks and Wildlife may find it useful to refer to Table 2 in order to readily identify monitored wetlands in their areas of management responsibility. Requests for data should be directed to [jim.lane@dpaw.wa.gov.au](mailto:jim.lane@dpaw.wa.gov.au).

### 3. OTHER MATTERS

#### *Historical SWWMP wetlands*

SWWMP depth gauges at the 53 *historically*-monitored wetlands (monitored under SWWMP at some time in the past but not currently; see Tables 1–3) are not maintained and many are now illegible or missing. Readers with a need to resume monitoring at one or more of these wetlands, even for a short period, are encouraged to contact SWWMP staff (or Landgate<sup>1</sup>) for details of the legally-protected Landgate Bench Marks (survey datums) at each of these wetlands so that new depth gauges and/or other monitoring equipment, if needed, can be installed and calibrated to the same elevations as those previously installed. Water level data ‘continuity’ can thereby be maintained.

#### *Bathymetric mapping*

Bathymetric mapping enables water surface areas, water volumes and salt loads (tonnes) to be calculated from measured depths and salinities and thereby assists in water balance and salt balance modelling and the assessment of likely impacts on specific wetlands of drainage, diversion, pumping and storage proposals, proposed land use changes and predicted climate change.

Between 1997 and 2009, SWWMP staff, working with Landgate and contract surveyors, and with significant funding support from several DPaW Regions and Districts, mapped the bathymetry (lakebed and shoreline contours and inflow and outflow channels) of 19 SWWMP wetlands. In 2014, the beds of two SWWMP wetlands (Yeagarup and Yeagarup South) were mapped by authors AC and YW. These authors also measured depths at multiple locations at Jasper while salinity-profiling this lake in November 2015 (Lane *et al.* 2016b). An additional 18 SWWMP wetlands are known to have been mapped by others, in two cases (Byenup in 2009 and Tordit-Gurru in 2011) with field assistance from SWWMP staff. A list of all 39 wetlands, together with their years of mapping, methods employed, products and custodians/sources is provided in Table 6. Table 7 provides a list of SWWMP wetlands (10) where one or more contours have been mapped by walking water edges and establishing GPS waypoints.

#### *Aerial photography*

High resolution, low altitude, aerial oblique photography is useful for mapping wetland vegetation, monitoring vegetation condition, planning and conducting biological surveys, planning recreational activities and facilities, and in interpretation and extension. During the period 2008–2012, 152 of the 158 SWWMP wetlands were flown and photographed with specialised camera equipment to obtain photographs suitable for these purposes. A sample of low resolution prints and enlargements has been presented in previous annual SWWMP reports (e.g. Lane *et al.* 2015b: photos 17–24 & 32–50). Digital copies of original, high resolution photographs of any of the 152 wetlands (see Table 8 for a list) may be obtained by directing requests to [jim.lane@dpaw.wa.gov.au](mailto:jim.lane@dpaw.wa.gov.au)

#### *Continuous water level and rainfall recording*

Since June 2009, authors AC and YW have installed continuous water level recorders and tipping-bucket rainfall gauges on 15 high conservation value SWWMP wetlands between Cataby, 140km north of Perth, and Esperance, on the eastern south coast (Lane *et al.* 2016a). These are, from N to SE, Crackers, Chandala, McLarty, Nine Mile, Broadwater, Davies, Gingilup, Maringup, Pillenorup, Pleasant View, ‘Albany 27157’, Mettler, ‘Esperance 26410’ and Big Boom.

Collection of continuous water level and on-site rainfall data will enable salt and water balance models<sup>2</sup> to be developed for these and other south-western Australian wetlands and will thereby assist in their conservation management. The data will also assist in development of an improved understanding of the likely consequences of predicted climate change, particularly rainfall decline, on wetlands of south-western Australia.

Effort is now focused on southern wetlands important for the endangered Australasian Bittern *Botaurus poiciloptilus*. In 2013 the water level recorders and rainfall gauges were removed from the five northern-most wetlands; Broadwater, Chandala, Crackers, McLarty and Nine Mile. In 2015 the water level recorders were removed from Pillenorup (the rainfall

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<sup>1</sup> Formerly known as the Department of Land Information, and the Department of Land Administration (DoLA).

<sup>2</sup> See Peck (2000) for an early example using SWWMP data from Coyrecup Lake.

recorders remain in place) and water level and rainfall recorders were installed at 'Albany 26386' (South Sister Nature Reserve), another important location for Australasian Bittern.

### *Trends analyses*

This report has been prepared as the ninth in a series of annual reports aimed at putting the most-recent SWWMP data in front of readers in un-analysed form as soon as possible after data collection. Results and interpretations of statistical trend analyses have been presented in other, less-frequent reports (Lane *et al.* 2004, 2015c) covering the longer time periods required to assess such trends.

### *Historical data to be added to SWWMP database*

Participants in the departmentally-funded RAOU (now BirdLife Australia) 1981-85 assessment of waterbird use of wetland nature reserves (and some other waterbodies) in the south-west (Jaensch *et al.* 1988), and subsequent surveys to c. 1992, occasionally recorded depth gauge readings on their waterbird survey forms. These data could be extracted, perhaps by a volunteer, and usefully added to the SWWMP database. The original survey forms are held by the DPaW Library (not for loan) and copies are held by J. Lane.

### *Biological monitoring, shallow groundwaters and detailed water chemistry*

The authors would like to draw readers' attention to the numerous reports and publications (see these listed under authors Cale, Gibson, Halse, Lyons, Pinder and Walker in the References section and in Appendix 1) concerning the fringing and emergent vegetation, waterbirds, aquatic invertebrates, groundwaters and detailed water chemistry of the 25 SWWMP wetlands (shown in bold in Tables 1, 2, 4–8) that have been intensively monitored by other DPaW scientists and collaborators under the State Salinity Strategy. *Inter alia*, these studies have provided a basis for trialling a framework and indicators for wetland extent, distribution and condition in Western Australia (Sim *et al.* 2008).

### *Natural Diversity Recovery Catchments*

Eighteen currently-monitored and one historically-monitored SWWMP wetland are within current or former Natural Diversity Recovery Catchments under the State Salinity Strategy (Table 5). Many recent reports and publications concerning on-ground works and site-specific investigations in these catchments may be found on the DPaW website<sup>1</sup>. They include the following<sup>2</sup>: Bourke (2011), Cale (2013a), Drake *et al.* (2014), Farmer *et al.* (2002), Gibson *et al.* (2005), Hearn *et al.* (2013), Higbid (2012), Hipsey *et al.* (2011), Keighery *et al.* (2002), Lizamore (2015), Metcalf (2013), Pinder *et al.* (2012b), Rutherford *et al.* (2015), Smith, M.G. (2010), Smith, M.J. *et al.* (2016), Vogwill *et al.* (2010) and Wallace (2012).

### *Recreation and Threatened Species*

Readers' attention is also drawn to Appendices 2 & 3 of the previous (2014) annual SWWMP report (Lane *et al.* 2015b), which relate to recreational use of SWWMP wetlands, and Appendix 4 (also of the previous report), concerning threatened vertebrate fauna and SWWMP wetlands.

## **4. ACKNOWLEDGEMENTS**

The authors wish to thank the many people who have participated in SWWMP or assisted this program in other ways over the past 38 years.

Most SWWMP data have been collected by the authors of this report and by G.B. Pearson (retired from DEC in Feb 2008) and D.R. Munro (retired from CALM in May 1991). Bill Muir, Brent Johnson and Sue Elscot each conducted a number of monitoring runs between 2000 and 2007. Keith Morris and Greg Keighery are thanked for making Brent and Bill available for this work. Ian Wheeler assisted with SW sector monitoring runs in 2005, 2007 and 2012–2015 and David Cale conducted the SE run in September 2013. Roger Hearn, Brad Barton and Adrian Pinder are thanked for Ian and David's assistance. Cherie Kemp (DPaW Busselton) assisted with SW sector monitoring runs in a voluntary capacity in 2015 and is also thanked.

In early years, principally the 1970s and 1980s, some data were collected by (in alphabetic order) Laurie Anderson, Margaret Brock, Bob Burking, Barry Carson, P. Conedera, R. Daniels, Ainsley Darcy-Evans, F. Dart-Kelly, G. Davies, G. Drew, M. Ellis, Phil Fuller, A. Goudie, Malcolm Graham, Stuart Halse, Sue Harrington, R. Heathering, Stephen Hopper, David James, Roger Jaensch, Chris Johns, D. Jones, R. Kenney, Peter Lambert, L. Martin, Joan Merrifield, Kingsley Miller, Susan Moore, Ray Motteram, Bill Muir, N. Plowman, Chris Robinson, Leon Silvester, Ray Smith, Andrew Storey, Ken Wallace, A. Watson, Andy Williams, D. Yates and Ken Youngson.

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<sup>1</sup> <https://www.dpaw.wa.gov.au/management/wetlands/recovery-catchments/210-recovery-catchments-further-information?showall=1>

<sup>2</sup> This is a *small sample* of recent reports and publications authored by former and current employees of DPaW and its predecessors DEC and CALM. One citation is provided per principal author, with the aim of introducing the reader to these authors and an example of their NDRC-related work. These are not necessarily the most significant or most recent NDRC-related publications by these authors.

Winchcombe and John Winchcombe. Grant Pearson was also assisted by Ted Costello, Tom Coughran, Wally Newman, Jen Pearson, Rebecca Pearson, Emma Pearson, Desmond Pratt, Laurie Prestage and Neville Watts.

Roger Schulz and Jenny McGuire of ChemCentre (formerly the Chemistry Centre of Western Australia within the WA Department of Mines and Petroleum) supervised the analysis of many water samples by ChemCentre and provided much valuable advice.

Bob McCarthy of Landgate (formerly known as Department of Land Information) provided invaluable advice and assistance concerning surveying of depth gauges, installation of Bench Marks and connection to Australian Height Datum at all but a few SWWMP wetlands. He also provided invaluable advice and assistance in the design and supervision of bathymetric surveys of many of the wetlands listed in Table 6 of this report. Brian Hugessen, Lindsey Schuiling and Doug Hardman of Landgate also made valuable contributions.

Wilf Lehre, Nick Caputi, Norman Hall, Paul Gioia and Russell Marks (Greenbase Consulting) programmed a multitude of computers for the storage, analysis and reporting of SWWMP data over three decades. Matt Williams of DPaW provided statistical advice concerning trends analysis of SWWMP data to 2000 (reported in Lane *et al.* 2004).

John Lizamore and Grace Patorniti of DPaW provided helpful information concerning recent management of Lake Warden and water supplementation at Thomsons Lake respectively. John also provided valuable advice regarding determination of salinity of hypersaline waters at Lake Warden.

Former DEC Director General Keiran McNamara and former DEC/DPaW Natural Resources Branch Manager Ken Wallace had lead roles in securing the funds needed for SWWMP to continue beyond 1996 and for all data collected since commencement of the program to be secured, stored, analysed and reported.

SWWMP has been entirely funded by the Government of Western Australia through the Department of Parks and Wildlife (1<sup>st</sup> July 2013 onwards) and its predecessors the Department of Environment and Conservation (2006 to 30<sup>th</sup> June 2013), the Department of Conservation and Land Management (1985–2006) and the Department of Fisheries and Wildlife (1977–1985).

The Commonwealth of Australia's Bureau of Meteorology is the source and copyright holder of the rainfall maps presented in this report as Figures 2–6. These maps are presented with permission of the Bureau.

## 5. REFERENCES<sup>1</sup>

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# PHOTOS

Readers are referred to the previous (2014) annual SWWMP report (Lane *et al.* 2015b) for a selection of 59 photographs concerning aspects of SWWMP.



# **TABLES**

**Table 1. Monitored wetlands, codes, coordinates, tenure, Local Government Authorities and monitoring periods. This Table includes all wetlands ('current' and 'historical') regularly monitored at any time since commencement of the South West Wetlands Monitoring Program in 1977, sorted alphabetically by wetland name.**

Wetland Name <sup>1</sup>	Code	Easting <sup>2</sup>	Northing <sup>2</sup>	Zone	Tenure <sup>4</sup>	Local Government Authority	Period monitored <sup>5,6,7</sup>
<i>Ace</i> <sup>8</sup>	ACE	758029	6344741	50	CPCWA	Lake Grace	7/80 - 5/85, 4/00
Albany 26385 <sup>9,13</sup>	ALB1	606041	6148594	50	CPCWA	Albany	5/81 - 5/85, 9/98 onwards
Albany 27157 <sup>13</sup>	ALB2	618826	6147490	50	CPCWA	Albany	3/80 - 5/85, 9/08, 9/09 onwards
<b>Altham</b> <sup>10</sup>	ALTH	634562	6302593	50	CPCWA	Kent	7/80 - 11/91, 4/00 onwards
Anderson	ANDE	588666	6217158	50	CPCWA	Tambellup	5/81 - 3/92, 9/00 onwards
<i>Angove</i>	ANGO	605850	6132590	50	CPCWA	Albany	11/79 - 5/85, 9/90, 4/00
<b>Ardath</b>	ARDA	609068	6448377	50	CPCWA	Bruce Rock	9/99 onwards
Atkins Yate	ATKI	750023	6330530	50	Private	Lake Grace	4/00 onwards
Bambun	BAMB	394880	6522829	50	CPCWA	Gingin	5/79 onwards
<b>Bennetts</b>	BENN	742440	6314572	50	CPCWA	Lake Grace	9/92 onwards
Beverley <sup>11</sup>	BEVE	514297	6432612	50	CPCWA / LGA	Beverley / Brookton / Quairading	6/78 onwards
<i>Biddy</i>	BIDD	682152	6344888	50	CPCWA	Lake Grace	7/82 - 5/85, 9/91 - 1/93, 4/00, 7/09
Big Boom <sup>3,13</sup>	BIGB				UCL	Esperance	9/12 onwards
<b>Blue Gum</b>	BLUE	401231	6615183	50	Private	Moora	11/99 - 11/10
Boat Harbour 1	BOA1	508245	6124962	50	CPCWA	Denmark	8/91 onwards
<i>Bokan</i>	BOKA	549253	6349883	50	CPCWA	Narrogin	7/79 - 5/85, 11/08
<b>Boyup Brook 18239</b> <sup>11</sup>	BOYU	469777	6257199	50	CPCWA	Boyup Brook	9/80 onwards
Broadwater <sup>13</sup>	BROA	341176	6273426	50	CPCWA	Busselton	11/85 onwards
Brown	BROW	559606	6397735	50	CPCWA	Corrigin	7/79 - 11/91, 9/97 onwards
<i>Bruce Rock 30969</i>	BRUC	575133	6473941	50	CPCWA	Bruce Rock	5/82 - 5/85
<b>Bryde</b>	BRYD	669625	6308051	50	MWR	Kent	6/79 onwards
Byenup	BYEN	476449	6182437	50	CPCWA	Manjimup	6/77 onwards
<i>Cairlocup</i>	CAIR	662520	6266817	50	CPCWA	Kent	9/80 - 5/85, 4/00, 5/09
<i>Camel</i>	CAME	588033	6204762	50	CPCWA	Cranbrook	8/80 - 5/85, 4/00
<b>Campion</b>	CAMP	627676	6554227	50	CPCWA	Nungarin / Merredin	3/79 - 11/91, 5/99 onwards
<i>Capamaura</i>	CAPA	393132	6691441	50	CPCWA	Carnamah	7/80 - 5/85, 3/90, 11/09
Casuarina	CASU	569525	6277315	50	CPCWA	Katanning	5/78 onwards
Chandala <sup>13</sup>	CHAN	400545	6514425	50	CPCWA	Chittering	5/79 onwards
<i>Chittering</i>	CHIT	414089	6521328	50	CPCWA	Chittering	4/78 - 11/86
Clifton	CLIF	374037	6376139	50	CPCWA	Mandurah / Waroona	11/85 onwards
<i>Cobline</i>	COBL	564476	6306117	50	CPCWA	Dumbleyung	6/79 - 11/91
Collets Road <sup>3</sup>	COLL			50	CPCWA	Jerramungup	9/01 onwards
<b>Coomalbidgup</b>	CMBG	349163	6267892	51	LGA	Esperance	11/99 onwards
<b>Coomelberrup</b>	COOM	573060	6303130	50	CPCWA	Dumbleyung	5/78 - 5/85, 3/93, 9/97 onwards
<b>Corrigin 12900</b> <sup>11</sup>	CORR	603415	6413294	50	CPCWA	Corrigin	7/82 onwards
<b>Coyrecup</b>	COYR	577072	6268374	50	CPCWA	Katanning	5/78 onwards
Crackers <sup>13</sup>	CRAC	365586	6579519	50	CPCWA	Dandaragan	7/80 onwards
<i>Cranbrook 25812</i>	CRAN	573707	6203482	50	CPCWA	Cranbrook	8/80 - 8/85, 4/00, 11/08
<i>Cronin</i>	CRON	760036	6413700	50	CPCWA	Kondinin	4/81 - 5/85, 11/95, 4/01, 07/09
Davies <sup>13</sup>	DAVI	318852	6211560	50	CPCWA	Augusta-Margaret River	4/91 onwards
Dobaderry	DOBA	463077	6437224	50	CPCWA	Beverley	9/80 onwards
<i>Dowerin</i>	DOWE	505689	6541494	50	LGA	Dowerin	6/79 - 5/81, 9/99
Dulbinning	DULB	557418	6359015	50	CPCWA	Wickepin	7/79 onwards
<b>Dumbleyung</b>	DUMB	560071	6309876	50	CPCWA / LGA	Dumbleyung / Wagin	6/79 onwards

**Table 1 continued.**

Wetland Name	Code	Easting	Northing	Zone	Tenure	Local Government Authority	Period monitored
<i>Dundas 33113</i>	<i>DUND</i>	391998	6359382	51	CPCWA	<i>Dundas</i>	11/79 – 11/91, 4/00
<b>Eganu</b>	EGAN	391567	6680556	50	CPCWA	Coorow	7/78 onwards
Egret	EGRE	379666	6314855	50	CPCWA	Harvey	5/85 onwards
<i>Ellen Brook</i>	<i>ELLE</i>	408758	6486521	50	CPCWA	<i>Swan</i>	7/79 – 11/84
Eneminga	ENEM	358697	6590178	50	CPCWA	Dandaragan	7/80 – 11/91, 09/08, 9/11 onwards
Esperance 26410 <sup>13</sup>	ESP1	304849	6265010	51	CPCWA	Esperance	11/81 onwards
<i>Esperance 27768</i>	<i>ESP2</i>	388786	6319769	51	CPCWA	<i>Esperance</i>	6/81 - 5/85, 4/00
<i>Esperance 27985</i>	<i>ESP3</i>	385963	6309342	51	CPCWA	<i>Esperance</i>	6/81 – 11/91, 4/00 - 11/10
<i>Esperance 32128</i>	<i>ESP4</i>	471180	6278570	51	CPCWA	<i>Esperance</i>	7/82 - 5/85
<i>Esperance 32776</i>	<i>ESP5</i>	438274	6294596	51	CPCWA	<i>Esperance</i>	6/81 - 5/85, 4/00
Flagstaff	FLAG	523642	6291467	50	CPCWA	Woodanilling	6/79 – 11/91, 9/97 onwards
Forrestdale	FORR	400062	6442240	50	CPCWA	Armadale	11/77 onwards
<b>Fraser's<sup>11</sup></b>	<i>FRAS</i>	507236	6542443	50	Private	<i>Dowerin</i>	11/99 – 11/10
<i>Gardner</i>	<i>GARD</i>	605828	6129943	50	CPCWA	<i>Albany</i>	5/81 - 5/85, 9/89, 9/90, 4/00, 9/08
Gibbs	GIBB	397627	6441667	50	CPCWA	Armadale	9/92 onwards
Gingilup <sup>3,13</sup>	GINL				CPCWA	Nannup	9/12 onwards
<i>Gingin 31241</i>	<i>GING</i>	387922	6525676	50	CPCWA	<i>Gingin</i>	6/79 - 5/85, 9/08
<i>Gnowangerup 26264</i>	<i>GNO1</i>	636100	6196278	50	CPCWA	<i>Gnowangerup</i>	3/80 – 11/91, 9/08
<i>Gnowangerup 26569</i>	<i>GNO2</i>	636830	6257497	50	CPCWA	<i>Gnowangerup</i>	7/82 - 5/85, 4/00
<b>Goonaping</b>	GOON	461797	6443309	50	CPCWA	Beverley	11/99 onwards
<i>Goorly</i>	<i>GOOR</i>	503350	6664801	50	UCL	<i>Dalwallinu</i>	9/00 – 11/09
Gore	GORE	363166	6263536	51	CPCWA	Esperance	11/79 onwards
<i>Gounter</i>	<i>GOUN</i>	672878	6413022	50	CPCWA	<i>Kondinin</i>	7/80 – 11/91, 5/98, 7/09
<i>Gundaring</i>	<i>GUND</i>	546974	6315587	50	CPCWA	<i>Wagin</i>	5/78 – 11/91
Guraga	GURA	363476	6585412	50	LGA	Dandaragan	9/82 onwards
Harvey 12632	HARV	386550	6348919	50	CPCWA	Harvey	8/80 onwards
<i>Hebitons</i>	<i>HEBI</i>	345831	6806160	50	Private	<i>Mullewa</i>	9/00 – 11/09
Hinds	HIND	456859	6596884	50	CPCWA	Wongan-Ballidu	6/79 – 11/91, 9/97 onwards
Jandabup	JAND	390937	6486982	50	CPCWA	Wanneroo	4/78 onwards
Jasper	JASP	379737	6190394	50	CPCWA	Nannup	11/85 onwards
Jerdacuttup	JERD	246655	6241791	51	CPCWA	Ravensthorpe	11/79 onwards
Joondalup	JOON	384352	6487435	50	CPCWA	Joondalup	4/78 onwards
<i>Karakin</i>	<i>KARA</i>	354428	6563848	50	WRC	<i>Gingin</i>	5/79 - 5/85, 9/87
Kent 29020 <sup>11</sup>	KENT	676818	6307259	50	CPCWA	Kent	9/80 - 5/85, 4/00 onwards
<i>Kondinin</i>	<i>KOND</i>	612045	6404006	50	CPCWA	<i>Kondinin</i>	6/79 – 11/91, 4/00
Kulunilup <sup>3</sup>	KULU				CPCWA	Cranbrook	9/14 onwards
<i>Kwobrup</i>	<i>KWOB</i>	593500	6267648	50	Private	<i>Kent</i>	6/79 – 11/91, 4/00
Kwornicup	KWOR	538575	6176168	50	CPCWA	Plantagenet	11/79 onwards
Little White	LITT	541357	6347281	50	CPCWA	Narrogin	7/79 – 11/91, 9/97 onwards
<b>Logue</b>	LOGU	321114	6695888	50	CPCWA	Carnamah	5/79 onwards
Maringup <sup>13</sup>	MARI	426553	6144690	50	CPCWA	Manjimup	6/91 onwards
Martinup	MART	516363	6289934	50	CPCWA	Woodanilling	6/79 – 11/91, 9/97 onwards
McLarty <sup>13</sup>	MCLA	379489	6379596	50	CPCWA	Murray	11/93 - 11/94, 9/96 onwards
Mears	MEAR	533098	6433941	50	CPCWA	Brookton	6/78 – 11/91, 9/97 onwards
Mettler <sup>13</sup>	METT	646369	6172015	50	CPCWA	Albany	9/82 onwards
<i>Miripin</i>	<i>MIRI</i>	518066	6288832	50	CPCWA	<i>Woodanilling</i>	6/81 - 5/85, 5/92, 9/09

**Table 1 continued.**

Wetland Name	Code	Easting	Northing	Zone	Tenure	Local Government Authority	Period monitored
Moates	MOAT	600908	6131536	50	CPCWA	Albany	11/79 onwards
<i>Mollerin</i>	<i>MOLL</i>	<i>554214</i>	<i>6625482</i>	<i>50</i>	<i>CPCWA</i>	<i>Koorda</i>	<i>7/80 – 5/85</i>
Mortjinup	MORT	373710	6259469	51	CPCWA	Esperance	4/00 onwards
Mount Le Grand	MLGR	419066	6240163	51	CPCWA	Esperance	9/00 onwards
<i>Mount Marshall 26687<sup>11</sup></i>	<i>MTMA</i>	<i>560937</i>	<i>6579648</i>	<i>50</i>	<i>CPCWA</i>	<i>Mt Marshall</i>	<i>7/81 – 11/91, 5/99</i>
Mowen	MOWE				CPCWA	Augusta-Margaret River	9/15 onwards
Muir	MUIR	471032	6185028	50	CPCWA	Manjimup	11/79 onwards
<i>Mungala</i>	<i>MUNG</i>	<i>395151</i>	<i>6521364</i>	<i>50</i>	<i>CPCWA</i>	<i>Gingin</i>	<i>6/79 – 5/85</i>
<i>Murapin</i>	<i>MURA</i>	<i>517681</i>	<i>6289397</i>	<i>50</i>	<i>CPCWA</i>	<i>Woodanilling</i>	<i>6/81 – 5/85</i>
<i>Murray 24739</i>	<i>MURR</i>	<i>378784</i>	<i>6382052</i>	<i>50</i>	<i>CPCWA</i>	<i>Murray</i>	<i>9/80 – 5/85, 8/08</i>
<i>Nambung</i>	<i>NAMB</i>	<i>394607</i>	<i>6521821</i>	<i>50</i>	<i>CPCWA</i>	<i>Gingin</i>	<i>6/79 – 5/85</i>
Ngopitchup	NGOP	531747	6242644	50	WRC	Broomehill	4/00 onwards
Ninan	NINA	467029	6575597	50	CPCWA	Wongan-Ballidu	7/78 – 11/91, 9/97 onwards
Nine Mile <sup>13</sup>	NINE	385536	6376505	50	CPCWA	Murray	6/81 onwards
<i>Nonalling</i>	<i>NONA</i>	<i>557243</i>	<i>6400132</i>	<i>50</i>	<i>CPCWA</i>	<i>Corrigin</i>	<i>7/79 – 5/85</i>
<b>Noobijup</b>	NOOB	480867	6192653	50	CPCWA	Cranbrook	9/99 onwards
Noonying	NOON	542507	6497744	50	CPCWA	Tammin	6/79 – 11/91, 9/97 onwards
North Parriup	NPAR	281562	6250268	51	CPCWA	Ravensthorpe	4/00 onwards
Owingup	OWIN	507258	6126756	50	CPCWA	Denmark	7/91 onwards
Pabelup South	PABE	725800	6222286	50	CPCWA	Jerramungup	4/00 onwards
<i>Pallarup</i>	<i>PALL</i>	<i>756890</i>	<i>6322416</i>	<i>50</i>	<i>CPCWA</i>	<i>Lake Grace</i>	<i>7/80 – 11/91, 4/00, 11/08, 7/09</i>
<b>Parkeyerring</b>	PARK	533156	6307263	50	CPCWA	Wagin	5/78 – 11/91, 9/97 onwards
Pillenorup <sup>13</sup>	PILL	601412	6187773	50	CPCWA	Plantagenet	4/00 onwards
<i>Pinjarrega</i>	<i>PINJ</i>	<i>395416</i>	<i>6670552</i>	<i>50</i>	<i>CPCWA</i>	<i>Coorow</i>	<i>5/79 – 11/91</i>
<i>Plantagenet 25386</i>	<i>PLAN</i>	<i>597710</i>	<i>6176617</i>	<i>50</i>	<i>CPCWA</i>	<i>Plantagenet</i>	<i>11/79 – 5/85, 11/93 – 11/96, 6/98, 11/08</i>
<b>Pleasant View<sup>13</sup></b>	PLEA	608357	6145314	50	CPCWA	Albany	11/79 onwards
Poorginup	POOR	476447	6177128	50	CPCWA	Manjimup	6/77 onwards
Powell	POWE	567497	6125091	50	CPCWA	Albany	6/81 onwards
<i>Queerearrup</i>	<i>QUEE</i>	<i>521251</i>	<i>6291518</i>	<i>50</i>	<i>LGA</i>	<i>Woodanilling</i>	<i>10/78 – 5/85, 9/88, 11/08</i>
Range Road Yate	RANG	666083	6275186	50	MWR	Kent	4/00 onwards
Red (Bruce Rock)	REDB	602548	6437065	50	CPCWA	Bruce Rock	7/81 – 5/85, 9/00 onwards
<i>Red (Manjimup)</i>	<i>REDM</i>	<i>468592</i>	<i>6189580</i>	<i>50</i>	<i>UCL</i>	<i>Manjimup</i>	<i>11/81 – 11/91, 4/00, 9/08</i>
<b>Ronnerup</b>	RONN	744169	6317786	50	CPCWA	Lake Grace	4/00 onwards
Shark	SHAR	394568	6263073	51	CPCWA	Esperance	11/79 onwards
<i>Shaster</i>	<i>SHAS</i>	<i>287219</i>	<i>6250710</i>	<i>51</i>	<i>CPCWA</i>	<i>Ravensthorpe</i>	<i>11/79 – 11/91, 5/09</i>
Station	STAT	402615	6259237	51	CPCWA	Esperance	3/80 onwards
<i>Streets</i>	<i>STRE</i>	<i>402493</i>	<i>6614985</i>	<i>50</i>	<i>Private</i>	<i>Moora</i>	<i>10/78 – 11/91, 9/08</i>
Taarblin North <sup>3,12</sup>	TAAN			50	CPCWA	Narrogin	9/04 onwards
Taarblin South <sup>12</sup>	TAAR	551258	6350395	50	CPCWA	Narrogin	5/78 onwards
Thomsons	THOM	389516	6441482	50	CPCWA	Cockburn	11/78 onwards
<b>Toolibin</b>	TOOL	557650	6357248	50	CPCWA	Wickepin	5/78 onwards
Tordit-Gurruup	TORD	476135	6179406	50	CPCWA	Manjimup	6/77 onwards
<b>Towerrinning</b>	TOWE	480708	6283950	50	CPCWA	West Arthur	12/77 onwards
<i>Twin Swamps N-W</i>	<i>TWIN</i>	<i>406579</i>	<i>6490175</i>	<i>50</i>	<i>CPCWA</i>	<i>Swan</i>	<i>7/79 – 11/84, 7/09</i>
Unicup	UNIC	474399	6200082	50	CPCWA	Cranbrook	9/80 onwards

**Table 1 continued.**

Wetland Name	Code	Easting	Northing	Zone	Tenure	Local Government Authority	Period monitored
Varley	VARL	722520	6379843	50	CPCWA	Kulin	9/81 – 11/91, 4/00 onwards
<i>Wagin 2088</i>	<i>WAGI</i>	<i>533281</i>	<i>6311808</i>	<i>50</i>	<i>CPCWA</i>	<i>Wagin</i>	<i>7/82 – 5/85</i>
Walbyring	WALB	555534	6355214	50	CPCWA	Wickepin	7/79 onwards
<i>Walling</i>	<i>WALL</i>	<i>395706</i>	<i>6521624</i>	<i>50</i>	<i>CPCWA</i>	<i>Gingin</i>	<i>7/81 – 5/85, 9/08</i>
<b>Walyormouring</b>	WALY	488021	6554454	50	CPCWA	Goomalling	7/78 – 11/91, 9/97 onwards
Wannamal	WANN	409642	6556691	50	CPCWA	Gingin	7/78 onwards
Warden	WARD	396947	6257428	51	CPCWA	Esperance	11/79 onwards
Wardering	WARG	523381	6290253	50	CPCWA	Woodanilling	5/78 – 11/91
Warrinup	WARR	523495	6199485	50	CPCWA	Cranbrook	3/80 onwards
West Arthur 5456	WEST	496510	6293047	50	CPCWA	West Arthur	8/80 – 11/91, 9/97 onwards
<b>Wheatfield</b>	WHEA	401069	6258818	51	CPCWA	Esperance	11/99 onwards
<i>White (Albany)</i>	<i>WHIA</i>	<i>606407</i>	<i>6152434</i>	<i>50</i>	<i>CPCWA</i>	<i>Albany</i>	<i>6/81 - 5/85, 9/98, 9/08</i>
White (Narrogin)	WHIN	542630	6347335	50	CPCWA	Narrogin	6/81 - 5/85, 9/97 onwards
White Water	WHIW	558770	6399914	50	CPCWA	Corrigin	6/81 - 11/91, 9/97 onwards
<i>Wild Horse</i>	<i>WILD</i>	<i>473637</i>	<i>6273462</i>	<i>50</i>	<i>CPCWA</i>	<i>West Arthur</i>	<i>6/81 - 5/85, 4/00, 9/09</i>
Wilson	WILS	382325	6189429	50	CPCWA	Manjimup	5/91 onwards
<b>Yaalup</b>	YAAL	647443	6263830	50	CPCWA	Kent	7/82 onwards
Yarnup	YARN	487368	6196543	50	CPCWA	Cranbrook	9/80 onwards
Yarra Yarra	YARR	379957	6726980	50	CPCWA	Carnamah	7/81 - 5/85, 9/97 onwards
Yeagarup <sup>3</sup>	YEAG			50	CPCWA	Manjimup	9/11 onwards
Yeagarup South <sup>3</sup>	YEAS			50	CPCWA	Manjimup	9/11 onwards
Yealering	YEAL	558587	6393389	50	LGA	Wickepin	6/78 onwards
Yellilup	YELL	686899	6201353	50	Private	Jerramungup	11/85 onwards
Yurine	YURI	385171	6543598	50	CPCWA	Gingin	5/79 - 11/91, 5/09 onwards

**Notes:**

1. Wetlands without official names at the commencement of monitoring are identified by Local Government Authority and Reserve Number (e.g. Albany 26385).
2. Coordinates (eastings and northings) are of depth gauge Bench Marks (local survey datums). These have been installed on higher ground at or near the edge of each monitored wetland, close to the depth gauge or gauge 'cluster' of that wetland. The accuracy of the coordinates of most (all coords except those highlighted in gray) has been improved from approx ±100m to approx ±5m in 2008-09 and subsequent years, principally by re-survey with hand-held GPS units (Garmin GPSmap 60Cx), using the WGS84 world datum, which for practical purposes equates to GDA94.
3. Bench Marks have not yet been installed at Big Boom, Colletts Road, Gingilup, Kulunilup, Mowen, Taarblin North, Yeagarup and Yeagarup South.
4. CPCWA (Conservation and Parks Commission of Western Australia); LGA (Local Government Authority); MWR (Minister for Water Resources); UCL (Unallocated Crown Land); WRC (Water & Rivers Commission). DPaw has management responsibility for wetlands vested in CPCWA.
5. 'Period Monitored' is described by the first and last records, for any parameter, of discrete periods of monitoring.
6. Routine monitoring was conducted every second month (Jan, Mar, May, Jul, Sep, Nov) from May 1981 to May 1985 and (to a limited extent) prior to this period. Since May 1985, routine monitoring has been conducted twice yearly, each September and November. Additional monitoring is occasionally undertaken for various reasons, e.g. following some exceptionally heavy, unseasonal rainfalls, usually with associated flooding.
7. A few wetlands (e.g. Forrestdale, Clifton) have been monitored more frequently (than at two-month intervals) for varying periods.
8. The 53 SWWMP wetlands shown in *italics* have been monitored under SWWMP at various times in the past, but are not currently monitored, not at least under SWWMP. They are additional to the 105 'current' wetlands.
9. Wetlands not shown in italics are the 105 'current' SWWMP wetlands being routinely monitored by the authors for surface water depth, salinity, pH and (until 2007) nutrients, under the State Salinity Strategy.

**Table 1 Notes continued.**

10. Wetlands shown in **bold** are the 25 SWWMP wetlands that have been Intensively Monitored under the State Salinity Strategy by other DPaW scientific staff for potential changes in plant and animal communities, shallow groundwater levels and detailed water chemistry.
11. Beverley Lakes is also known as Yenyenning Lakes; Boyup Brook 18239 as Kulicup Swamp; Corrigin 12900 as Paperbark Swamp, Frasers Lake as Maisey's 1 or Maisey's A; Kent 29020 as East Lake Bryde and Mt Marshall 26687 as Wallambin North.
12. Taarblin North and Taarblin South refer to the northern and southern basins respectively of one wetland (Taarblin).
13. Continuous rainfall and water level recorders have been in operation on 15 wetlands ('Albany 26385', 'Albany 27157', Big Boom, Broadwater, Chandala, Crackers, Davies, 'Esperance 26410', Gingilup, Maringup, McLarty, Mettler, Nine Mile, Pillenorup, Pleasant View) for varying periods from June 2009 onwards (Lane *et al.* 2016a).

**Table 2. Monitored wetlands by DPaW Regions and Districts, with tenure, Reserve No. and Name.**  
See Table 1 for the coordinates (eastings and northings) and other details of each wetland.

No.	DPaW Region	No.	DPaW District	No.	Wetland <sup>1</sup>	Tenure <sup>2</sup>	Reserve No. <sup>7</sup>	Reserve Name <sup>3,7</sup>
1	Midwest	1	Geraldton	1	Hebitons	Private	-	-
2	Midwest	2	Moora	1	Blue Gum <sup>4</sup>	Private	-	-
3	Midwest	3	Moora	2	Capamaura <sup>5</sup>	CPCWA	A 24618	Capamauro NR
4	Midwest	4	Moora	3	Crackers	CPCWA	28558	Namming NR
5	Midwest	5	Moora	4	Eganu	CPCWA	A 25210	Pinjarrega NR
6	Midwest	6	Moora	5	Eneminga	CPCWA	A 27394	Eneminga NR
7	Midwest	7	Moora	6	Guraga	LGA	31223	-
8	Midwest	8	Moora	7	Logue	CPCWA	29073	Lake Logue NR
9	Midwest	9	Moora	8	Pinjarrega	CPCWA	A 25210	Pinjarrega NR
10	Midwest	10	Moora	9	Streets	Private	-	-
11	Midwest	11	Moora	10	Yarra Yarra	CPCWA	A 26442	Yarra Yarra Lakes NR
12	South Coast	1	Albany	1	Albany 26385	CPCWA	26385	South Sister NR-
13	South Coast	2	Albany	2	Albany 27157	CPCWA	27157	Cheyne Road NR
14	South Coast	3	Albany	3	Angove	CPCWA	A 27956	Two Peoples Bay NR
15	South Coast	4	Albany	4	Camel	CPCWA	A 26161	Camel Lake NR
16	South Coast	5	Albany	5	Collets Road	CPCWA	-	Fitzgerald River NP
17	South Coast	6	Albany	6	Cranbrook 25812	CPCWA	A 25812	-
18	South Coast	7	Albany	7	Gardner	CPCWA	A 27956	Two Peoples Bay NR
19	South Coast	8	Albany	8	Gnowangerup 26264	CPCWA	26264	Mailalup NR
20	South Coast	9	Albany	9	Jerdacuttup	CPCWA	A 40156	Jerdacuttup Lakes NR
21	South Coast	10	Albany	10	Mettler	CPCWA	26894	Mettler Lake NR
22	South Coast	11	Albany	11	Moates	CPCWA	A 27956	Two Peoples Bay NR
23	South Coast	12	Albany	12	Pabelup South	CPCWA	-	Fitzgerald River NP
24	South Coast	13	Albany	13	Pillenorup	CPCWA	-	Stirling Range NP
25	South Coast	14	Albany	14	Plantagenet 25386	CPCWA	A 25386	Chillinup NR
26	South Coast	15	Albany	15	Pleasant View	CPCWA	A 15107	Lake Pleasant View NR
27	South Coast	16	Albany	16	Powell	CPCWA	A 25809	Lake Powell NR
28	South Coast	17	Albany	17	White (Albany)	CPCWA	A 36550	North Sister NR
29	South Coast	18	Albany	18	Yellilup	Private	-	-
30	South Coast	19	Esperance	1	Big Boom	UCL		
31	South Coast	20	Esperance	2	Coomalbidgup	LGA	24633	-
32	South Coast	21	Esperance	3	Dundas 33113	CPCWA	A 33113	-
33	South Coast	22	Esperance	4	Esperance 26410	CPCWA	26410	-
34	South Coast	23	Esperance	5	Esperance 27768	CPCWA	27768	-
35	South Coast	24	Esperance	6	Esperance 27985	CPCWA	27985	-
36	South Coast	25	Esperance	7	Esperance 32128	CPCWA	A 32128	-
37	South Coast	26	Esperance	8	Esperance 32776	CPCWA	A 32776	-
38	South Coast	27	Esperance	9	Gore	CPCWA	A 32419	Lake Gore NR
39	South Coast	28	Esperance	10	Mortijinup	CPCWA	A 35557	Lake Mortijinup NR
40	South Coast	29	Esperance	11	Mount Le Grand	CPCWA	A 22795	Cape Le Grand NP
41	South Coast	30	Esperance	12	North Parriup	CPCWA	A 32339	Lake Shaster NR
42	South Coast	31	Esperance	13	Shark	CPCWA	A 31197	Shark Lake NR
43	South Coast	32	Esperance	14	Shaster	CPCWA	A 32339	Lake Shaster NR
44	South Coast	33	Esperance	15	Station	CPCWA	A 23825	Mullet Lake NR
45	South Coast	34	Esperance	16	Warden	CPCWA	A 32257	Lake Warden NR
46	South Coast	35	Esperance	17	Wheatfield	CPCWA	A 15231	Woody Lake NR
47	South West	1	Blackwood	1	Boyup Brook 18239 <sup>6</sup>	CPCWA	18239	Kulicup NR
48	South West	2	Blackwood	2	Broadwater	CPCWA	27080	
49	South West	3	Blackwood	3	Davies	CPCWA	30826	Leeuwin-Naturaliste NP
50	South West	4	Blackwood	4	Gingilup	CPCWA	30626	Gingilup Swamps NR
51	South West	5	Blackwood	5	Mowen	CPCWA	-	SF 'F32' (proposed NR)
52	South West	6	Wellington	1	Egret	CPCWA	38393	Morangel NR
53	South West	7	Wellington	2	Harvey 12632	CPCWA	12632	Riverdale NR
54	South West	8	Wellington	3	Towerrinning	CPCWA	A 24917	Towerrinning NR
55	South West	9	Wellington	4	Wild Horse	CPCWA	A 1740	Wild Horse Swamp NR

Table 2 continued.

No.	DPaW Region	No.	DPaW District	No.	Wetland	Tenure	Reserve No.	Reserve Name
56	Swan	1	Perth Hills	1	Chandala	CPCWA	A 37060	Chandala NR
57	Swan	2	Perth Hills	2	Chittering	CPCWA	A 29538	Chittering Lakes NR
58	Swan	3	Perth Hills	3	Dobaderry	CPCWA	A 43281	Wandoo Cons. Park
59	Swan	4	Perth Hills	4	Goonaping	CPCWA	A 43281	Wandoo Cons. Park
60	Swan	5	Swan Coastal	1	Bambun	CPCWA	A 26756	Bambanup NR
61	Swan	6	Swan Coastal	2	Clifton	CPCWA		Yalgorup NP
62	Swan	7	Swan Coastal	3	Ellen Brook	CPCWA	A 27620	Ellen Brook NR
63	Swan	8	Swan Coastal	4	Forrestdale	CPCWA	A 24781	Forrestdale Lake NR
64	Swan	9	Swan Coastal	5	Gibbs	CPCWA	48797	
65	Swan	10	Swan Coastal	6	Gingin 31241	CPCWA	31241	
66	Swan	11	Swan Coastal	7	Jandabup	CPCWA	7349	Jandabup NR
67	Swan	12	Swan Coastal	8	Joondalup	CPCWA	A 31048	Lake Joondalup NR
68	Swan	13	Swan Coastal	9	Karakin	WRC	7504	-
69	Swan	14	Swan Coastal	10	McLarty	CPCWA	A 39404	Lake McLarty NR
70	Swan	15	Swan Coastal	11	Mungala	CPCWA	A 26756	Bambanup NR
71	Swan	16	Swan Coastal	12	Murray 24739	CPCWA	A 24739	
72	Swan	17	Swan Coastal	13	Nambung	CPCWA	A 26756	Bambanup NR
73	Swan	18	Swan Coastal	14	Nine Mile	CPCWA	A 16907	Nine Mile Lake NR
74	Swan	19	Swan Coastal	15	Thomsons	CPCWA	A 15556	Thomsons Lake NR
75	Swan	20	Swan Coastal	16	Twin Swamps N-W	CPCWA	A 27621	Twin Swamps NR
76	Swan	21	Swan Coastal	17	Wallerling	CPCWA	A 26756	Bambanup NR
77	Swan	22	Swan Coastal	18	Wannamal	CPCWA	A 9838	Lake Wannamal NR
78	Swan	23	Swan Coastal	19	Yurine	CPCWA	A 9676	Yurine Swamp NR
79	Warren	1	Donnelly	1	Byenup	CPCWA	A 31880	Lake Muir NR
80	Warren	2	Donnelly	2	Jasper	CPCWA	36996	D'Entrecasteaux NP
81	Warren	3	Donnelly	3	Kulunilup	CPCWA	A 26677	Kulunilup NR
82	Warren	4	Donnelly	4	Maringup	CPCWA	36996	D'Entrecasteaux NP
83	Warren	5	Donnelly	5	Muir	CPCWA	A 31880	Lake Muir NR
84	Warren	6	Donnelly	6	Noobijup	CPCWA	A 26680	Noobijup NR
85	Warren	7	Donnelly	7	Pooginup	CPCWA	A 31880	Lake Muir NR
86	Warren	8	Donnelly	8	Red (Manjimup)	UCL		
87	Warren	9	Donnelly	9	Tordit-Gurru	CPCWA	A 31880	Lake Muir NR
88	Warren	10	Donnelly	10	Unicup	CPCWA	A 25798	Unicup NR
89	Warren	11	Donnelly	11	Wilson	CPCWA	A 36996	D'Entrecasteaux NP
90	Warren	12	Donnelly	12	Yarnup	CPCWA	29601	Yarnup NR
91	Warren	13	Donnelly	13	Yeagarup	CPCWA	A 47878	Greater Hawke NP
92	Warren	14	Donnelly	14	Yeagarup South	CPCWA	A 36996	D'Entrecasteaux NP
93	Warren	15	Frankland	1	Boat Harbour 1	CPCWA	A 41010	Owingup NR
94	Warren	16	Frankland	2	Kwornicup	CPCWA	32284	Kwornicup NR
95	Warren	17	Frankland	3	Owingup	CPCWA	A 41010	Owingup NR
96	Wheatbelt	1	Central	1	Ardath	CPCWA	A 25062	Seagroatt NR
97	Wheatbelt	2	Central	2	Beverley <sup>6</sup>	CPCWA / LGA	31837	Yenyenning Lakes NR
98	Wheatbelt	3	Central	3	Bruce Rock 30969	CPCWA	A 30969	Kwoyin NR
99	Wheatbelt	4	Central	4	Campion	CPCWA	24789	Lake Campion NR
100	Wheatbelt	5	Central	5	Cronin	CPCWA	A 36526	Lake Cronin NR
101	Wheatbelt	6	Central	6	Dowerin	LGA	4244	
102	Wheatbelt	7	Central	7	Frasers <sup>6</sup>	Private	-	-
103	Wheatbelt	8	Central	8	Goorly	UCL	-	-
104	Wheatbelt	9	Central	9	Hinds	CPCWA	A 16305	Lake Hinds NR
105	Wheatbelt	10	Central	10	Mollerin	CPCWA	A 14429	Mollerin NR
106	Wheatbelt	11	Central	11	Mt Marshall 26687 <sup>6</sup>	CPCWA	A 26687	North Wallambin NR
107	Wheatbelt	12	Central	12	Ninan	CPCWA	A 27026	Lake Ninan NR
108	Wheatbelt	13	Central	13	Noonying	CPCWA	A 10313	Noonying NR
109	Wheatbelt	14	Central	14	Red (Bruce Rock)	CPCWA	A 16493	Red Lake NR
110	Wheatbelt	15	Central	15	Walyormouring	CPCWA	A 17186	Walyormouring NR

Table 2 continued.

No.	DPaW Region	No.	DPaW District	No.	Wetland	Tenure	Reserve No.	Reserve Name
111	Wheatbelt	16	Southern W'belt <sup>8</sup>	1	Ace	CPCWA	A 34522	Lake Ace NR
112	Wheatbelt	17	Southern W'belt	2	Altham	CPCWA	A 28395	Chinocup NR
113	Wheatbelt	18	Southern W'belt	3	Anderson	CPCWA	A 25914	Anderson Lake NR
114	Wheatbelt	19	Southern W'belt	4	Atkins Yate	Private	-	-
115	Wheatbelt	20	Southern W'belt	5	Bennetts	CPCWA	36445	Dunn Rock NR
116	Wheatbelt	21	Southern W'belt	6	Biddy	CPCWA	17617	Lake Biddy NR
117	Wheatbelt	22	Southern W'belt	7	Bokan	CPCWA	9628	Bokan NR
118	Wheatbelt	23	Southern W'belt	8	Brown	CPCWA	A 24428	Nonalling NR
119	Wheatbelt	24	Southern W'belt	9	Bryde	CPCWA	48436	
120	Wheatbelt	25	Southern W'belt	10	Cairlocup	CPCWA	28324	Cairlocup NR
121	Wheatbelt	26	Southern W'belt	11	Casuarina	CPCWA	A 25136	Cobline NR
122	Wheatbelt	27	Southern W'belt	12	Cobline	CPCWA	A 25133	Cobline NR
123	Wheatbelt	28	Southern W'belt	13	Coomelberrup	CPCWA	A 10472	Coomelberrup NR
124	Wheatbelt	29	Southern W'belt	14	Corrigin 12900 <sup>6</sup>	CPCWA	12900	Paperbark NR
125	Wheatbelt	30	Southern W'belt	15	Coyrecup	CPCWA	A 28552	Coyrecup NR
126	Wheatbelt	31	Southern W'belt	16	Dulbinning	CPCWA	A 9617	
127	Wheatbelt	32	Southern W'belt	17	Dumbleyung	CPCWA / LGA	26664	Dumbleyung Lake NR
128	Wheatbelt	33	Southern W'belt	18	Flagstaff	CPCWA	A 27609	Flagstaff Lake NR
129	Wheatbelt	34	Southern W'belt	19	Growangerup 26569	CPCWA	A 26569	
130	Wheatbelt	35	Southern W'belt	20	Gounter	CPCWA	A 21253	Lake Gounter NR
131	Wheatbelt	36	Southern W'belt	21	Gundaring	CPCWA	A 24373	Gundaring Lake NR
132	Wheatbelt	37	Southern W'belt	22	Kent 29020 <sup>6</sup>	CPCWA	A 29020	Lake Bryde NR
133	Wheatbelt	38	Southern W'belt	23	Kondinin	CPCWA	A 22519	Kondinin Lake NR
134	Wheatbelt	39	Southern W'belt	24	Kwobrup	Private	-	-
135	Wheatbelt	40	Southern W'belt	25	Little White	CPCWA	A 26786	Carmody NR
136	Wheatbelt	41	Southern W'belt	26	Martinup	CPCWA	A 17055	Martinup NR
137	Wheatbelt	42	Southern W'belt	27	Mears	CPCWA	A 12398	Lake Mears NR
138	Wheatbelt	43	Southern W'belt	28	Miripin	CPCWA	A 24912	Miripin NR
139	Wheatbelt	44	Southern W'belt	29	Murapin	CPCWA	A 17257	Murapin NR
140	Wheatbelt	45	Southern W'belt	30	Ngopitchup	WRC	2184	
141	Wheatbelt	46	Southern W'belt	31	Nonalling	CPCWA	A 24428	Nonalling NR
142	Wheatbelt	47	Southern W'belt	32	Pallarup	CPCWA	A 29860	Pallarup NR
143	Wheatbelt	48	Southern W'belt	33	Parkeyerring	CPCWA	A 10733	Parkeyerring NR
144	Wheatbelt	49	Southern W'belt	34	Queerearrup	LGA	17255	
145	Wheatbelt	50	Southern W'belt	35	Range Road Yate	MWR	29124	
146	Wheatbelt	51	Southern W'belt	36	Ronnerup	CPCWA	A 39422	Lake King NR
147a	Wheatbelt	52a	Southern W'belt	37a	Taarblin North	CPCWA	A 9550	Taarblin Lake NR
147b	Wheatbelt	52b	Southern W'belt	38b	Taarblin South	CPCWA	A 9550	Taarblin Lake NR
148	Wheatbelt	53	Southern W'belt	38	Toolibin	CPCWA	A 24556	Toolibin NR
149	Wheatbelt	54	Southern W'belt	39	Varley	CPCWA	A 27928	Lake Varley NR
150	Wheatbelt	55	Southern W'belt	40	Wagin 2088	CPCWA	A 2088	Casuarina NR
151	Wheatbelt	56	Southern W'belt	41	Walbyring	CPCWA	A 14398	Walbyring NR
152	Wheatbelt	57	Southern W'belt	42	Wardering	CPCWA	A 17258	Wardering Lake NR
153	Wheatbelt	58	Southern W'belt	43	Warrinup	CPCWA	A 1931	Warrenup NR
154	Wheatbelt	59	Southern W'belt	44	West Arthur 5456	CPCWA	A 5456	Dead Mans Swamp NR
155	Wheatbelt	60	Southern W'belt	45	White (Narrogin)	CPCWA	A 21284	Quongunnerunding NR
156	Wheatbelt	61	Southern W'belt	46	White Water	CPCWA	A 24428	Nonalling NR
157	Wheatbelt	62	Southern W'belt	47	Yaalup	CPCWA	A 36967	
158	Wheatbelt	63	Southern W'belt	48	Yealering	LGA	9610	

Notes:

1. Wetlands without official names at the commencement of monitoring are identified by Local Government Authority and Reserve Number, e.g. Albany 26385.
2. CPCWA (Conservation and Parks Commission of Western Australia); LGA (Local Government Authority); MWR (Minister for Water Resources); UCL (Unallocated Crown Land); WRC (Water & Rivers Commission). DPaW has management responsibility for wetlands vested in CPCWA.
3. Entries in the 'Reserve No.' and 'Reserve Name' columns are incomplete and unchecked.

**Table 2 Notes continued.**

4. Wetlands shown in **bold** are in the group of 25 Intensively Monitored wetlands (see Note 10 of Table 1).
5. In addition to the 105 SWWMP wetlands currently being monitored under the State Salinity Strategy there are 53 SWWMP wetlands that have been monitored at some time in the past, but are not currently being monitored under SWWMP. These 53 are shown above in *italics*.
6. Beverley Lakes is also known as Yenyenning Lakes, Boyup Brook 18239 as Kulicup Swamp; Corrigin 12900 as Paperbark Swamp, Frasers Lake as Maisey's 1 or Maisey's A; Kent 29020 as East Lake Bryde and Mt Marshall 26687 as Wallambin North.
7. Reserves in some instances do not include all of the relevant SWWMP wetland.
8. On 1st July 2015, the Great Southern District *organisational unit* (personnel, etc.) was amalgamated with the Wheatbelt Region organisational unit and therefore no longer exists as a discrete unit. For convenience and clarity, and in keeping with the Wheatbelt theme for the Region, the former Great Southern District *geographical area* is referred to in this report as the Southern Wheatbelt.

**Table 3. Number of current and historically-monitored wetlands in each DPaW Region and District.**

<b>DPaW Region (Current, historical)</b>	<b>DPaW District</b>	<b>Current</b>	<b>Historical</b>
Midwest (6, 5)	Geraldton	0	1
	Moora	6	4
South Coast (22, 13)	Albany	11	7
	Esperance	11	6
South West (8, 1)	Blackwood	5	0
	Wellington	3	1
Swan (14, 9)	Perth Hills	3	1
	Swan Coastal	11	8
Warren (16, 1)	Donnelly	13	1
	Frankland	3	0
Wheatbelt (39, 24)	Central	8	7
	Southern Wheatbelt <sup>1</sup>	31	17
<b>Totals (105, 53)</b>		<b>105</b>	<b>53</b>

The locations of DPaW Regional and District Headquarters are, in most instances, not obvious from Region or District names and are therefore listed below, for the convenience of readers.

<b>DPaW Region / District</b>	<b>HQ Location</b>
Midwest /	Geraldton
Geraldton	Geraldton
Moora	Jurien Bay
South Coast /	Albany
Albany	Albany
Esperance	Esperance
South West /	Bunbury
Blackwood	Busselton
Wellington	Collie
Swan /	Bentley
Perth Hills	Mundaring
Swan Coastal	Wanneroo
Warren /	Manjimup
Donnelly	Pemberton
Frankland	Walpole
Wheatbelt /	Narrogin
Central	Merredin
Southern Wheatbelt <sup>1</sup>	Narrogin

**Notes:**

1. On 1st July 2015, the Great Southern District *organisational unit* (personnel, etc.) was amalgamated with the Wheatbelt Region *organisational unit* and therefore no longer exists as a discrete unit. For convenience and clarity, and in keeping with the Wheatbelt theme for the Region, the former Great Southern District *geographical area* is referred to in this report as the Southern Wheatbelt.

**Table 4. Ramsar and Directory Sites of south-western Australia, and their SWWMP wetlands.**

**A. Ramsar Sites (each contains one or more Directory Site).**

Ramsar Site	Directory Site	SWWMP wetland
Becher Point Wetlands	Becher Point Wetlands	-
Forrestdale & Thomsons Lakes	Forrestdale Lake	Forrestdale
	Thomsons Lake	Thomsons
Lake Gore	Lake Gore System	Gore
Muir-Byenup System	(southern part of) Byenup Lagoon System	Byenup, Poorganup, Tordit-Gurrup
	Lake Muir	Muir
Peel-Yalgorup System	Yalgorup Lakes System	Clifton
	Lake McLarty System	McLarty, <i>Murray 24739</i>
Toolibin Lake	Toolibin Lake	<b>Toolibin</b>
Vasse-Wonnerup System	Vasse-Wonnerup Wetland System	- <sup>1</sup>
Lake Warden System	Lake Warden System	Station, Warden, <b>Wheatfield</b>
		13 Current    1 Historical

**B. Other Directory Sites (not within Ramsar Sites).**

Directory Site	SWWMP wetland
Balicup Lake System	<i>Camel</i>
Barragup Swamp	-
Benger Swamp	-
Bennetts Lake*	<b>Bennetts</b>
Booragoon Lake	-
Brixton Street Swamps	-
Lake Bryde – East Lake Bryde	<b>Bryde</b> , Kent 29020
(northern part of) Byenup Lagoon System	Noobijup, Kulunilup, Unicup, Yarnup
Cape Leeuwin System	-
Chandala Swamp	Chandala
Chittering-Needonga Lakes	<i>Chittering</i>
Coyrecup Lake	<b>Coyrecup</b>
Lake Cronin	<i>Cronin</i>
Doggerup Creek System	-
Dumbleyung Lake	<b>Dumbleyung</b>
Dunn Rock Gnamma Holes*	-
Ellen Brook Swamps System	<i>Ellen Brook, Twin Swamps NH</i>
Gibbs Road Swamp System	Gibbs
Gingilup-Jasper Wetland System	Gingilup, Jasper, Wilson
Lake Grace System	<b>Altham</b>
Guraga Lake	Guraga
Herdsmen Lake	-
Hutt Lagoon System	-
Joondalup Lake	Joondalup
Karakin Lakes	<i>Karakin</i>
Kondinin Sampire Marsh*	-
Lancelin Defence Training Area (Cwlth)	-
Lake Logue-Indoon System	<b>Logue</b>
Maringup Lake	Maringup

Directory Site	SWWMP wetland
McCarley's Swamp (Ludlow Swamp)	-
Loch McNess System	-
Moates Lake System	Moates, <i>Angove, Gardner</i>
Mortijinup Lake System	Mortijinup
Mount Soho Swamps	-
Owingup Swamp System	Boat Harbour 1, Owingup
Palmer Barracks, Guildford (Cwlth)	-
Paperbark Swamp*	<b>Corrigin 12900</b>
Perth Airport Woodland Swamps (Cwlth)	-
Pink Lake	-
Lake Pleasant View System	Albany 26385, <b>Pleasant View</b>
RAAF Caversham (Cwlth)	-
Rottnest Island Lakes	-
Spectacles Swamp	-
Lake Theitis	-
Wannamal Lakes System	Wannamal
Yealering Lakes System	Brown, White Water, Yealering, <i>Nonalling</i>
Yellilup Yate Swamp System	Yellilup
Yorkrakine Rock Pools	-
31 Current    9 Historical	

The 'Directory' is 'A Directory of Important Wetlands in Australia', a cooperative project of the State, Territory and Commonwealth Governments. Three editions have been published, in 1993, 1996 and 2001. The Directory has been added to and updated from time to time (e.g. by Elscot *et al.* 2009\*). It is accessible online at <http://www.environment.gov.au>.

Nine south-west Western Australian Directory Sites are not listed in Tables 4A or 4B, because they are essentially riverine or estuarine and are not monitored under, or as an adjunct to, SWWMP. They are Peel-Harvey Estuary (part of Peel-Yalgorup Ramsar Site), Avon River Valley, Blackwood River (Lower Reaches) and Tributaries, Broke Inlet System, Culham Lake System, Fitzgerald Inlet System, Murchison River (Lower Reaches), Oyster Harbour and Swan-Canning Estuary.

Wetlands shown in *italics* have been monitored in the past under SWWMP, but not currently.

Wetlands shown in **bold** are in the group of 25 Intensively Monitored wetlands (see Note 10 of Table 1).

<sup>1</sup> The authors have maintained continuous water level recorders on the Vasse and Wonnerup estuaries since 1994, as an adjunct to SWWMP.

**Table 5. Natural Diversity Recovery Catchments<sup>1</sup> and their SWWMP wetlands (as at Dec 2016).**

Natural Diversity Recovery Catchment	DPaW Region	DPaW District	SWWMP-monitored wetlands
Lake Bryde	Wheatbelt	Southern Wheatbelt <sup>7</sup>	<b>Bryde</b> , Kent 29020 <sup>2</sup>
Buntine-Marchagee <sup>1</sup>	Wheatbelt	Central	-
Drummond <sup>1</sup>	Swan	Perth Hills	-
Esperance Lakes <sup>1</sup>	South Coast	Esperance	Shark, Station, Warden, <b>Wheatfield</b>
Muir-Unicup <sup>1</sup>	Warren	Donnelly	Byenup, Kulunilup, Muir, <b>Noobijup</b> , Poorginup, Tordit-Gurrup, Unicup, Yarnup, <i>Red (Manjimup)</i> <sup>4</sup>
Toolibin Lake	Wheatbelt	Southern Wheatbelt <sup>7</sup>	Dulbinning, Taarblin <sup>3</sup> , <b>Toolibin</b> , Walbyring
			18 Current      1 Historical

**Notes:**

1. Since Nov 2013, Buntine-Marchagee, Esperance Lakes and Muir-Unicup have lost NDRC status and the future of the Drummond NDRC is uncertain.
2. Kent 29020 is also known as East Lake Bryde.
3. Taarblin has two basins, north and south. Both are monitored under SWWMP.
4. *Red (Manjimup)* has been monitored in the past under SWWMP, but is not currently.
5. Several of the SWWMP wetlands listed above are also monitored under the Lake Bryde and Toolibin Lake Natural Diversity Recovery Catchment (NDRC) programs. Nonetheless it is considered important to continue their twice-yearly routine monitoring under SWWMP, which in all cases pre-dates the establishment of NDRCs and their programs.
6. Wetlands shown in **bold** are in the group of 25 Intensively Monitored wetlands (see Note 10 of Table 1).
7. On 1st July 2015, the Great Southern District *organisational unit* (personnel, etc.) was amalgamated with the Wheatbelt Region organisational unit and therefore no longer exists as a discrete unit. For convenience and clarity, and in keeping with the Wheatbelt theme for the Region, the former Great Southern District *geographical area* is referred to in this report as the Southern Wheatbelt.

**Table 6. Bathymetrically-mapped SWWMP wetlands.**

All SWWMP wetlands known by the authors to have been bathymetrically-mapped are listed in the Table below, together with the years of mapping, methods employed, products and custodians / sources.

No.	Wetland	Custodian / Source	Year of Mapping	Products	Methods / Comment
1	<b>Ardath</b> <sup>1</sup>	DPaW	2004	Paper map. Digital data. D-V calc. <sup>4</sup>	RTK <sup>5</sup>
2	<b>Beverley</b> <sup>2</sup>	DPaW	2002/3	Paper map. Digital data. D-V calc.	RTK
3	<b>Bryde</b>	DPaW	2002	Paper map. Digital data. D-V calc.	RTK
4	Byenup	DPaW	2009	Digital data. Maps in preparation.	RTK by boat, amphibious vehicle (Argo) & walking.
4	Byenup	DPaW	2013	Digital data. D-V calc. D-SA calc.	LIDAR & RTK
5	Clifton	DoW		Not seen.	Mapping referred to by Knott <i>et al.</i> (2003). See also Beggs (2014).
6	<b>Campion</b>	DPaW	2004/6/7	Paper map. Digital data. D-V calc.	RTK
7	<b>Coyrecup</b>	DPaW	2001	Paper map. Digital data. D-V calc. D-SA calc. <sup>4</sup>	RTK at 100m intervals on 9 E-W transects 300m apart.
	Dulbinning	-	-	-	See Water Authority file 00617SW for inflow & outflow channel and some lakebed elevns.
8	<b>Dumbleyung</b>	DPaW	1998/01	Paper map. Digital data. D-V calc. D-SA calc.	RTK of bed at 100m intervals on 8 E-W transects 1km apart; Photogrammetry of shore. Correction of outflow elevation in 2002.
9	Forrestdale	DoW		Paper map.	Metropolitan Water Board Special Plan 81C, FB 11318, Stadia Book 11319. Arnold (1990d) pp 356, 357, 359, 360.
10	Gore	DPaW	2003	Paper map. Digital data. D-V calc.	Boat-based RTK and echo-sounding.
11	Hinds	DPaW	2000/1	Paper & PDF maps. Digital data. D-V calc.	
12	Jandabup	DoW		Paper map. 1:5,000.	MWB Special Plan 115, File 763107/74, Stadia L.B. 11650. Arnold (1990a) pp 60, 61, 66.
13	Jasper	–; DPaW	–; 2015	–; Paper map. Digital data (nearest 0.1m)	Depth transects are shown in Dortch (1996) and Lane <i>et al.</i> (2016b).
14	Joondalup	DoW		Paper map. 1:5,000.	MWB Special Plan 117B, File 763107/74, Stadia L.B. 11651. Arnold (1990b) pp 104, 110-112.
15	Kent 29020 <sup>2</sup>	DPaW	2002	Paper map. Digital data. D-V calc.	RTK
16	Mears	DPaW	2003	Paper map. Digital data. D-V calc.	RTK
17	<i>Mollerin</i> <sup>3</sup>	DPaW	2004	<i>Paper map. Digital data</i>	<i>Photogrammetry and RTK ground truthing.</i>
18	<i>Mt Marshall 26687</i> <sup>2</sup>	DPaW	2004	<i>Paper map. Digital data. D-V calc.</i>	RTK
19	Muir	DPaW	2013	Digital data. D-V calc. D-SA calc.	LIDAR
20	Ninan	DPaW	2000	Paper & PDF maps. Digital data. D-V calc.	Boat-based RTK and echo-sounding.
21	<b>Noobijup</b>	DPaW	2013	Digital data. D-V calc.	LIDAR
22	Poorginup	DPaW	2013	Digital data. D-V calc.	LIDAR
23	Powell	DoW	2003?		
24	<i>Red (Manjimup)</i>	DPaW	2013	<i>Digital data. D-V calc. D-SA calc.</i>	LIDAR
25	Shark	DPaW	2003	Paper map. Digital data. D-V calc.	Boat-based RTK.
26	Station	DPaW	2002	Paper map. Digital data. D-V calc.	RTK
27a	Taarblin North	DPaW	2004	Paper & PDF maps. Digital data. D-V calc.	RTK
28	Thomsons			Paper maps.	See Arnold (1990c) pp 266, 267, 269, 270. Davis <i>et al.</i> (2001).
29	<b>Toolibin</b>	DoW		Scanned copy of paper map, '609 009 PWD WA 54732', with spot heights and 0.5mAHD contours	Also see Water Authority file 00617SW for inflow & outflow channel and W bank elevns.
30	Tordit-Gurru	DPaW	2011	Paper map. Digital data.	RTK by amphibious vehicle (Argo) & walking.
30	Tordit-Gurru	DPaW	2013	Digital data. D-V calc. D-SA calc.	LIDAR & RTK
31	<b>Towerrinning</b>	Froend & McComb (1991)	1986	≈ 1:25,000 paper map (<A4); 0.5m contours to –2.5m, shoreline = 0.0m	Weighted graduated rope; ≈ 50m intervals on 7 transects (4 E-W, 3 N-S) ≈ 500m apart.
31	<b>Towerrinning</b>	JDA (2012)	2012	Digital & paper maps in JDA (2012).	Spot heights, cross sections & invert levels surveyed by JBA Surveys in Feb 2012.

**Table 6 continued.**

No.	Wetland	Custodian / Source	Year of Mapping	Products	Methods / Comment
32	Unicup	DPaW	2013	Digital data. D-V calc. D-SA calc.	LIDAR & RTK
33	Walbyring	-	-	-	See DoW (Water Authority) file 00617SW for inflow channel elevations.
34	Warden	DPaW	2002	Paper map. Digital data. D-V calc.	Boat-based RTK and echo-sounding.
35	<b>Wheatfield</b>	DPaW	2002	Paper map. Digital data. D-V calc.	Boat-based RTK.
36	Yarnup	DPaW	2013	Digital data. D-V calc.	LIDAR
37	Yeagarup	DPaW	2014	Digital map (rectified orthophoto).	Boat-based survey with weighted, graduated survey line and hand-held GPS.
38	Yeagarup South	DPaW	2014	Digital map (rectified orthophoto).	Boat-based survey with weighted, graduated survey line and hand-held GPS.
39	<b>Yealering</b>	JDA (2012)	2012	Digital & paper maps in JDA (2012).	Spot heights, cross sections & invert levels surveyed by JBA Surveys in Feb 2012.

**Notes:**

1. Wetlands shown in **bold** are in the group of 25 Intensively Monitored wetlands (see Note 10 of Table 1).
2. Beverley Lakes is also known as Yenyenning Lakes, Kent 29020 as East Lake Bryde and Mt Marshall 26687 as Wallambin North.
3. Wetlands shown in *italics* have been monitored in the past under SWWMP, but not currently.
4. 'D-V calc.' and 'D-SA calc.' are Depth to Volume and Depth to Surface Area calculators, derived from the bathymetry.
5. 'RTK' refers to collecting 3-dimensional position (point) data using the Real-Time Kinematic Differential Global Positioning System (RTK DGPS).
6. SWWMP personnel have participated in mapping several non-SWWMP wetlands, these being Bokarup, Brown (connected to Champion), Cowcowing, Quallilup, and other wetlands (in addition to Station, Warden and Wheatfield) in the Lake Warden System, namely Ewans, Mullet, Windabout and Woody.

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**Table 7. SWWMP wetlands being bathymetrically-mapped by walking water edges.**

In 2008, SWWMP personnel began opportunistic mapping of the bathymetry of SWWMP wetlands, by walking and logging GPS waypoints along all or part of the surface water edge at a variety of water levels. This work may be undertaken while at wetlands for other reasons such as routine monitoring in September and November, gauge maintenance in autumn and multiple point data collection at any time of the year. Over the long term, the accumulated data could provide rudimentary, low-cost bathymetric maps, depth - volume calculators and depth - surface area calculators for many wetlands. These are a fundamental requirement for water and salt balance investigations and related eco-hydrological studies.

To date, the following contours have been logged.

Wetland	Bathym. Survey No.	Date	Depth gauge reading (m)	% of surface water edge mapped	Who	Comment
<b>Blue Gum</b> <sup>1</sup>	1.1	03 Nov 2008	0.07	100%	JL	
“	1.2	17 Sep 2009	0.275	100%	JL	
Chandala	2.1	31 Jul 2008	1.11	≈ 70%	JL	Logged waypoints along W, N and S edges
“	2.2	11 May 2009	0.15	100%	JL	
“		13 May 2009	-	-	JL	Logged waypoints along NE stream inflow.
“	2.3	13 Nov 2009	0.75	≈ 40%	JL	
“	2.4	18 Dec 2009	0.56	100%	JL	
“	2.5	14 Jan 2010	0.335	100%	JL	Many small islands within mapped contour.
Cronin	3	16 July 2009	TBD	≈ 95%	JL	Logged all of basin water edge but not all of inlet channel.
Esperance 26410	4	17 Jul 2008	0.79	100%	JL	
Frasers	5	19 Sep 2009	0.23	100%	JL	
Guraga	6.1	16 Sep 2008	0.41	≈ 7%	JL	Logged waypoints for 0.5km along E edge.
“	6.2	17 Sep 2009	0.65	100%	JL	
Harvey 12632	7.1	06 Aug 2008	0.94	100%	JL	
“		18 Mar 2008	0.00	-	JL	Lake dry. Logged ≈ 95% of distinct peat edge.
“	7.2	22 Jul 2009	0.26	100%	JL	
“	7.3	17 Nov 2009	0.46	100%	JL	
McLarty	8.1	27 Aug 2008	1.18	100%	JL	
“	8.2	17 Nov 2009	0.56	100%	JL	
“	8.3	20 Dec 2009	0.30	100%	JL	
West Arthur 5456	9	18 Jul 2008	0.15	100%	JL	
Yellilup	10	07 Dec 2009	0.995	100%	AC	
<b>10 Wetlands</b>	<b>20 Surveys</b>					

**Notes:**

1. Wetland shown in **bold** is in the group of 25 Intensively Monitored wetlands (see Note 10 of Table 1).

**Table 8. SWWMP wetlands for which aerial oblique photography is available. High-resolution, low altitude, aerial oblique photographs of the following SWWMP wetlands were captured by DEC during 2008–2012. Requests for these photographs should be directed to [jim.lane@dpaw.wa.gov.au](mailto:jim.lane@dpaw.wa.gov.au). A small charge for supply may be required.**

No.	Wetland Name <sup>1</sup>	Code	Tenure <sup>2</sup>	Local Government Authority	Date of Photography
1	<i>Ace</i> <sup>3</sup>	ACE	CPCWA	Lake Grace	17 May 2009
2	Albany 26385 <sup>4</sup>	ALB1	CPCWA	Albany	21 May 2008
3	Albany 27157	ALB2	CPCWA	Albany	21 May 2008, 28 May 2011
4	<b>Altham</b> <sup>5</sup>	ALTH	CPCWA	Kent	17 May 2009
5	Anderson	ANDE	CPCWA	Tambellup	21 May 2008
6	<i>Angove</i>	ANGO	CPCWA	Albany	21 May 2008
7	<b>Ardath</b>	ARDA	CPCWA	Bruce Rock	07 June 2010
8	Atkins Yate	ATKI	Private	Lake Grace	17 May 2009
9	Bambun	BAMB	CPCWA	Gingin	06 June 2010
10	<b>Bennetts</b>	BENN	CPCWA	Lake Grace	17 May 2009
11	Beverley <sup>6</sup>	BEVE	CPCWA / LGA	Beverley / Brookton / Quairading	07 June 2010
12	<i>Biddy</i>	BIDD	CPCWA	Lake Grace	26 May 2010
13	<b>Blue Gum</b>	BLUE	Private	Moora	07 June 2010
14	Boat Harbour 1	BOA1	CPCWA	Denmark	26 May 2008, 27 May 2011
15	<i>Bokan</i>	BOKA	CPCWA	Narrogin	26 May 2010
16	<b>Boyup Brook 18239</b> <sup>6</sup>	BOYU	CPCWA	Boyup Brook	19 May 2008
17	Broadwater	BROA	CPCWA	Busselton	6, 11 & 12 May 2011
18	Brown	BROW	CPCWA	Corrigin	07 June 2010
19	<i>Bruce Rock 30969</i>	BRUC	CPCWA	Bruce Rock	26 May 2012
20	<b>Bryde</b>	BRYD	CPCWA	Kent	17 May 2009
21	Byenup	BYEN	CPCWA	Manjimup	24 May 2008, 11 May 2011
22	<i>Cairlocup</i>	CAIR	CPCWA	Kent	17 May 2009
23	<i>Camel</i>	CAME	CPCWA	Cranbrook	21 May 2008
24	<b>Campion</b>	CAMP	CPCWA	Nungarin / Merredin	26 May 2012
25	<i>Capamaura</i>	CAPA	CPCWA	Carnamah	07 June 2010
26	Casuarina	CASU	CPCWA	Katanning	17 May 2009
27	Chandala	CHAN	CPCWA	Chittering	06 June 2010
28	<i>Chittering</i>	CHIT	CPCWA	Chittering	06 June 2010
29	Clifton	CLIF	CPCWA	Mandurah / Waroona	29 May 2011
30	<i>Coblinine</i>	COBL	CPCWA	Dumbleyung	17 May 2009
31	Collets Road	COLL	CPCWA	Jerramungup	16 May 2009
32	<b>Coomalbidgup</b>	CMBG	LGA	Esperance	16 May 2009
33	<b>Coomelberrup</b>	COOM	CPCWA	Dumbleyung	17 May 2009
34	<b>Corrigin 12900</b> <sup>6</sup>	CORR	CPCWA	Corrigin	07 June 2010
35	<b>Coyrecup</b>	COYR	CPCWA	Katanning	17 May 2009
36	Crackers	CRAC	CPCWA	Dandaragan	07 June 2010
37	<i>Cranbrook 25812</i>	CRAN	CPCWA	Cranbrook	21 May 2008
38	<i>Cronin</i>	CRON	CPCWA	Kondinin	26 May 2010
39	Davies	DAVI	CPCWA	Augusta-Margaret River	19 May 2008, 11 May 2011
40	Dobaderry	DOBA	CPCWA	Beverley	07 June 2010
41	<i>Dowerin</i>	DOWE	LGA	Dowerin	27 May 2012
42	Dulbinning	DULB	CPCWA	Wickepin	26 May 2010
43	<b>Dumbleyung</b>	DUMB	CPCWA / LGA	Dumbleyung / Wagin	17 May 2009, 26 May 2010
44	<i>Dundas 33113</i>	DUND	CPCWA	Dundas	16 May 2009

**Table 8 continued.**

No.	Wetland Name <sup>1</sup>	Code	Tenure <sup>2</sup>	Local Government Authority	Date of Photography
45	<b>Eganu</b>	EGAN	CPCWA	Coorow	07 June 2010
46	Egret	EGRE	CPCWA	Harvey	19 May 2008
47	<i>Ellen Brook</i>	<i>ELLE</i>	<i>CPCWA</i>	<i>Swan</i>	<i>06 June 2010</i>
48	Eneminga	ENEM	CPCWA	Dandaragan	07 June 2010
49	Esperance 26410	ESP1	CPCWA	Esperance	16 May 2009
50	<i>Esperance 27768</i>	<i>ESP2</i>	<i>CPCWA</i>	<i>Esperance</i>	<i>16 May 2009</i>
51	<i>Esperance 27985</i>	<i>ESP3</i>	<i>CPCWA</i>	<i>Esperance</i>	<i>16 May 2009</i>
52	<i>Esperance 32128</i>	<i>ESP4</i>	<i>CPCWA</i>	<i>Esperance</i>	<i>16 May 2009</i>
53	<i>Esperance 32776</i>	<i>ESP5</i>	<i>CPCWA</i>	<i>Esperance</i>	<i>16 May 2009</i>
54	Flagstaff	FLAG	CPCWA	Woodanilling	17 May 2009
55	Forrestdale	FORR	CPCWA	Armadale	06 June 2010
56	<b>Fraser's</b>	<i>FRAS</i>	<i>Private</i>	<i>Dowerin</i>	<i>27 May 2012</i>
57	<i>Gardner</i>	<i>GARD</i>	<i>CPCWA</i>	<i>Albany</i>	<i>21 May 2008</i>
58	Gibbs	GIBB	CPCWA	Armadale	06 June 2010
59	<i>Gingin 31241</i>	<i>GING</i>	<i>CPCWA</i>	<i>Gingin</i>	<i>06 June 2010</i>
60	<i>Gnowangerup 26264</i>	<i>GNO1</i>	<i>CPCWA</i>	<i>Gnowangerup</i>	<i>21 May 2008</i>
61	<i>Gnowangerup 26569</i>	<i>GNO2</i>	<i>CPCWA</i>	<i>Gnowangerup</i>	<i>17 May 2009</i>
62	<b>Goonaping</b>	GOON	CPCWA	Beverley	07 June 2010
63	<i>Goorly</i>	<i>GOOR</i>	<i>UCL</i>	<i>Dalwallinu</i>	<i>27 May 2012</i>
64	Gore	GORE	CPCWA	Esperance	16 May 2009
65	<i>Gounter</i>	<i>GOUN</i>	<i>CPCWA</i>	<i>Kondinin</i>	<i>26 May 2010</i>
66	<i>Gundaring</i>	<i>GUND</i>	<i>CPCWA</i>	<i>Wagin</i>	<i>17 May 2009</i>
67	Guraga	GURA	LGA	Dandaragan	07 June 2010
68	Harvey 12632	HARV	CPCWA	Harvey	19 May 2008
69	<i>Hebitons</i>	<i>HEBI</i>	<i>Private</i>	<i>Mullewa</i>	<i>27 May 2012</i>
70	Hinds	HIND	CPCWA	Wongan-Ballidu	27 May 2012
71	Jandabup	JAND	CPCWA	Wanneroo	06 June 2010
72	Jasper	JASP	CPCWA	Nannup	20 May 2008
73	Jerdacuttup	JERD	CPCWA	Ravensthorpe	16 May 2009
74	Joondalup	JOON	CPCWA	Joondalup	06 June 2010
75	<i>Karakin</i>	<i>KARA</i>	<i>WRC</i>	<i>Gingin</i>	<i>06 June 2010</i>
76	Kent 29020 <sup>6</sup>	KENT	CPCWA	Kent	17 May 2009
77	<i>Kondinin</i>	<i>KOND</i>	<i>CPCWA</i>	<i>Kondinin</i>	<i>07 June 2010</i>
78	<i>Kwobrup</i>	<i>KWOB</i>	<i>Private</i>	<i>Kent</i>	<i>17 May 2009</i>
79	Kwornicup	KWOR	CPCWA	Plantagenet	21 May 2008
80	Little White	LITT	CPCWA	Narrogin	26 May 2010
81	<b>Logue</b>	LOGU	CPCWA	Carnamah	27 May 2012
82	Maringup	MARI	CPCWA	Manjimup	20 May 2008, 11 & 28 May 2011
83	Martinup	MART	CPCWA	Woodanilling	11 May 2011
84	McLarty	MCLA	CPCWA	Murray	21 May 2008
85	Mears	MEAR	CPCWA	Brookton	07 June 2010, 26 May 2012
86	Mettler	METT	CPCWA	Albany	21 May 2008
87	<i>Miripin</i>	<i>MIRI</i>	<i>CPCWA</i>	<i>Woodanilling</i>	<i>17 May 2009</i>
88	Moates	MOAT	CPCWA	Albany	21 May 2008
89	<i>Mollerin</i>	<i>MOLL</i>	<i>CPCWA</i>	<i>Koorda</i>	<i>26 May 2012</i>
90	Mortijinup	MORT	CPCWA	Esperance	16 May 2009

**Table 8 continued.**

No.	Wetland Name <sup>1</sup>	Code	Tenure <sup>2</sup>	Local Government Authority	Date of Photography
91	Mount Le Grand	MLGR	CPCWA	Esperance	16 May 2009
92	<i>Mt Marshall 26687</i>	MTMA	CPCWA	<i>Mt Marshall</i>	<i>26 May 2012</i>
93	Muir	MUIR	CPCWA	Manjimup	20 & 24 May 2008
94	<i>Mungala</i>	MUNG	CPCWA	<i>Gingin</i>	<i>06 June 2010</i>
95	<i>Murapin</i>	MURA	CPCWA	<i>Woodanilling</i>	<i>17 May 2009</i>
96	<i>Murray 24739</i>	MURR	CPCWA	<i>Murray</i>	<i>21 May 2008</i>
97	<i>Nambung</i>	NAMB	CPCWA	<i>Gingin</i>	<i>06 June 2010</i>
98	Ngopitchup	NGOP	WRC	Broomehill	24 May 2008
99	Ninan	NINA	CPCWA	Wongan-Ballidu	27 May 2012
100	Nine Mile	NINE	CPCWA	Murray	19 May 2008
101	<i>Nonalling</i>	NONA	CPCWA	<i>Corrigin</i>	<i>07 June 2010</i>
102	<b>Noobijup</b>	NOOB	CPCWA	Cranbrook	24 May 2008
103	Noonying	NOON	CPCWA	Tammin	27 May 2012
104	North Parriup	NPAR	CPCWA	Ravensthorpe	16 May 2009
105	Owingup	OWIN	CPCWA	Denmark	20 May 2008
106	Pabelup South	PABE	CPCWA	Jerramungup	16 May 2009
107	<i>Pallarup</i>	PALL	CPCWA	<i>Lake Grace</i>	<i>17 May 2009</i>
108	Parkeyerring	PARK	CPCWA	Wagin	11 May 2011
109	Pillenorup	PILL	CPCWA	Plantagenet	21 May 2008, 28 May 2011
110	<i>Pinjarrega</i>	PINJ	CPCWA	<i>Coorow</i>	<i>07 June 2010</i>
111	<i>Plantagenet 25386</i>	PLAN	CPCWA	<i>Plantagenet</i>	<i>21 May 2008</i>
112	<b>Pleasant View</b>	PLEA	CPCWA	Albany	21 May 2008, 28 May 2011, 28 May 2012
113	Poorginup	POOR	CPCWA	Manjimup	20 May 2008
114	Powell	POWE	CPCWA	Albany	21 May 2008, 28 May 2011
115	<i>Queerearrup</i>	QUEE	LGA	<i>Woodanilling</i>	<i>17 May 2009</i>
116	Range Road Yate	RANG	MWR	Kent	17 May 2009
117	Red (Bruce Rock)	REDB	CPCWA	Bruce Rock	07 June 2010
118	<i>Red (Manjimup)</i>	REDM	UCL	<i>Manjimup</i>	<i>24 May 2008</i>
119	<b>Ronnerup</b>	RONN	CPCWA	Lake Grace	17 May 2009
120	Shark	SHAR	CPCWA	Esperance	16 May 2009
121	<i>Shaster</i>	SHAS	CPCWA	<i>Ravensthorpe</i>	<i>16 May 2009</i>
122	Station	STAT	CPCWA	Esperance	16 May 2009
123	<i>Streets</i>	STRE	Private	<i>Moora</i>	<i>07 June 2010</i>
124a	Taarblin North <sup>7</sup>	TAAN	CPCWA	Narrogin	26 May 2010
124b	Taarblin South <sup>7</sup>	TAAR	CPCWA	Narrogin	26 May 2010
125	Thomsons	THOM	CPCWA	Cockburn	06 June 2010
126	<b>Toolibin</b>	TOOL	CPCWA	Wickepin	26 May 2010, 07 Jun 2010
127	Tordit-Gurru	TORD	CPCWA	Manjimup	20 May 2008 (limited), 11 (E) & 28 (W) May 2011
128	<b>Towerrinning</b>	TOWE	CPCWA	West Arthur	24 May 2008
129	<i>Twin Swamps N-W</i>	TWIN	CPCWA	<i>Swan</i>	<i>06 June 2010</i>
130	Unicup	UNIC	CPCWA	Cranbrook	11, 27 & 28 May 2011
131	Varley	VARL	CPCWA	Kulin	26 May 2010
132	<i>Wagin 2088</i>	WAGI	CPCWA	<i>Wagin</i>	<i>17 May 2009</i>
133	Walbyring	WALB	CPCWA	Wickepin	26 May 2010, 07 Jun 2010
134	<i>Walling</i>	WALL	CPCWA	<i>Gingin</i>	<i>06 June 2010</i>
135	<b>Walyormouring</b>	WALY	CPCWA	Goomalling	27 May 2012

**Table 8 continued.**

No.	Wetland Name <sup>1</sup>	Code	Tenure <sup>2</sup>	Local Government Authority	Date of Photography
136	Wannamal	WANN	CPCWA	Gingin	06 June 2010
137	Warden	WARD	CPCWA	Esperance	16 May 2009
138	<i>Wardering</i>	WARG	<i>CPCWA</i>	<i>Woodanilling</i>	<i>11 May 2011</i>
139	Warrinup	WARR	CPCWA	Cranbrook	24 May 2008
140	West Arthur 5456	WEST	CPCWA	West Arthur	11 & 27 May 2011
141	<b>Wheatfield</b>	WHEA	CPCWA	Esperance	16 May 2009
142	<i>White (Albany)</i>	WHIA	<i>CPCWA</i>	<i>Albany</i>	<i>21 May 2008</i>
143	White (Narrogin)	WHIN	CPCWA	Narrogin	26 May 2010, 07 Jun 2010
144	White Water	WHIW	CPCWA	Corrigin	07 June 2010
145	<i>Wild Horse</i>	<i>WILD</i>	<i>CPCWA</i>	<i>West Arthur</i>	<i>19 May 2008</i>
146	Wilson	WILS	CPCWA	Manjimup	20 May 2008
147	<b>Yaalup</b>	YAAL	CPCWA	Kent	17 May 2009
148	Yarnup	YARN	CPCWA	Cranbrook	24 May 2008, 27 May 2011
149	Yarra Yarra	YARR	CPCWA	Carnamah	26 May 2012
150	Yealering	YEAL	LGA	Wickepin	07 June 2010
151	Yellilup	YELL	Private	Jerramungup	21 May 2008, 28 May 2011
152	Yurine	YURI	CPCWA	Gingin	06 June 2010

**Notes:**

1. Wetlands without official names at the commencement of monitoring are identified by Local Government Authority and Reserve Number (e.g. Albany 26385).
2. CPCWA (Conservation and Parks Commission of Western Australia); LGA (Local Government Authority); MWR (Minister for Water Resources); UCL (Unallocated Crown Land), WRC (Water & Rivers Commission). DPaw has management responsibility for wetlands vested in CPCWA.
3. The SWWMP wetlands shown in *italics* have been monitored under SWWMP at various times in the past, but are not currently monitored, not at least under SWWMP.
4. Wetlands not shown in italics are 'current' SWWMP wetlands being routinely monitored by the authors for surface water depth, salinity, pH and (until 2007) nutrients, under the State Salinity Strategy. These include the Intensively Monitored wetlands shown in bold.
5. Wetlands shown in **bold** are SWWMP wetlands that have been Intensively Monitored by other DPaw scientific staff for potential changes in plant and animal communities, shallow groundwater levels and detailed water chemistry under the State Salinity Strategy. They are a subset of the 'current' wetlands.
6. Beverley Lakes is also known as Yenyening Lakes; Boyup Brook 18239 as Kulicup Swamp; Corrigin 12900 as Paperbark Swamp and Kent 29020 as East Lake Bryde.
7. Taarblin North and Taarblin South refer to the northern and southern basins respectively of one wetland (Taarblin).
8. The only SWWMP wetlands not yet photographed are Big Boom (Esperance), Gingilup (Nannup), Kulunilup (Cranbrook), Mowen (Augusta – Margaret River), Yeagarup (Manjimup) and Yeagarup South (Manjimup). These wetlands have only recently been added to SWWMP (Yeagarup and Yeagarup South in 2011, Big Boom and Gingilup in 2012, Kulunilup in 2014, Mowen in 2015).

**Table 9. Number of SWWMP wetlands with 1, 2, 3, etc. years of September and/or<sup>1</sup> November depth, pH and salinity data as at November 2015.**

Number of years of Sep and/or <sup>1</sup> Nov data at Nov 2015	No. of currently monitored wetlands			No. of historically monitored wetlands		
	With Depth data	With pH data	With Salinity data	With Depth data	With pH data	With Salinity data
0	2				2	2
1		2	2		4	2
2		1	1	1	4	4
3				5	10	7
4	2	2	2	4	12	5
5	2	2	2	9	4	8
6		1	1	10		5
7		1	1	4	2	4
8		2	1		3	1
9			1		5	4
10				2	4	
11		3		3	1	5
12		3	1	3	1	2
13	1	1	2	8		2
14	2	2		3		1
15	3	1	4			
16	7	6	8			
17	4	3	2			
18			1			
19	1	2				
20	2	2	1		1	
21	2	5	5			1
22	1	4	3	1		
23	5	4	2			
24	3	6	4			
25		3	5			
26	1	3	5			
27	3	2	3			
28	1	3	2			
29	1	2	2			
30	2	6	4			
31	6	5	3			
32	4	4	4			
33	4	10	1			
34	5	12	3			
35	6	2	8			
36	12		10			
37	16		7			
38	7		4			
<b>Total Wetlands</b>	105	105	105	53	53	53

**SUMMARY**

Number of years of Sep and/or <sup>1</sup> Nov data at Nov 2014	No. of currently monitored wetlands			No. of historically monitored wetlands		
	With Depth data	With pH data	With Salinity data	With Depth data	With pH data	With Salinity data
≥ 10	99	94	94	20	7	11
≥ 20	81	73	76	1	1	1
≥ 30	61	39	44	0	0	0

1. The objective is to monitor all SWWMP wetlands in both September *and* November each year. However, on occasions, circumstances may prevent data collection at one or a few wetlands in either Sept or Nov (rarely at same wetland in both months) of a particular year.
2. More wetlands have 10+, 20+, 30+ years of depth data than salinity (or pH) data because in most years some wetlands are dry in September and/or November. Fewer wetlands have 10+, 20+, 30+ years of pH data than salinity data because routine pH monitoring began several years after depth and salinity monitoring.
3. Taarblin North is not included in this Table. It has been monitored for a shorter period than Taarblin South, which is included. They are two connected basins of the same wetland (Lake Taarblin).



# APPENDICES

## APPENDIX 1. Reports, publications and databases in which use is made of SWWMP data.

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**APPENDIX 2. Recreation and SWWMP wetlands.**

**APPENDIX 3. ‘Waterbird Spectaculars’.**

**APPENDIX 4. Threatened species in SWWMP wetlands**

Readers are referred to the previous (2014) annual SWWMP report (Lane *et al.* 2015b) for these Appendices.



# GRAPHS

Depth, salinity and pH graphs are presented on the following pages for 104 of the 105 currently monitored SWWMP wetlands. No graphs are provided for Mowen as this wetland has only recently been added to the program.

Graphs are arranged in the same order (alphabetical by wetland name) as in Table 1, where coordinates, tenure and location (by Local Government Authority) are provided.

Filled symbols indicate data collected during the September and November routine monitoring periods.

Empty symbols indicate data collected during the January, March, May and July routine monitoring periods. Routine monitoring in these months continued until May 1985. This is the first annual report in which these January – July data have been presented.

The two-month interval, routine monitoring of 1981-85 was conducted to coincide with the 1981-85 assessment of waterbird use of wetland nature reserves of south-western Australia (Lane 1981, Jaensch *et al.* 1988).

Notes beneath graphs indicate:

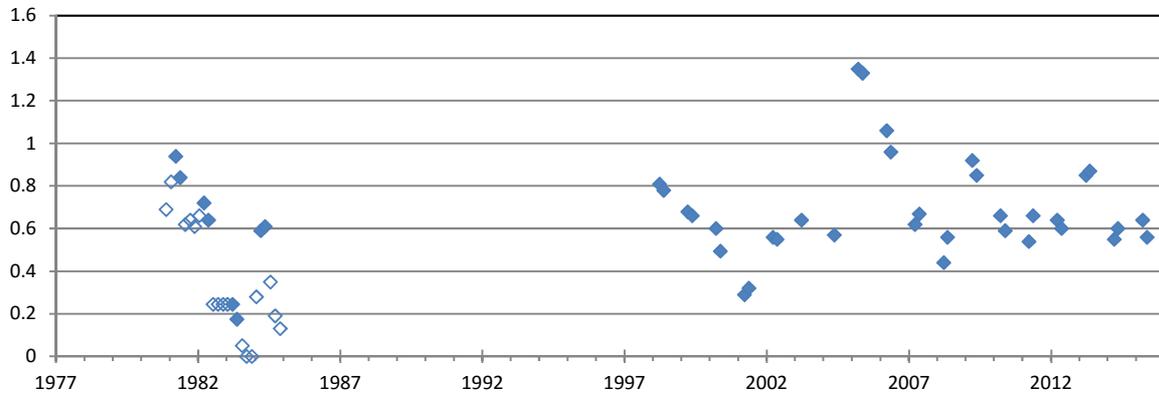
- The 25 wetlands intensively monitored by DPaW scientific staff for additional biological and physico-chemical attributes (see Section 3 and Note 10 of Table 1).
- Listing as a Wetland of International Importance under the ‘Ramsar’ *Convention on Wetlands* (Government of Western Australia 1990, 2000; Ramsar Secretariat 2013) and listing in ‘*A Directory of Important Wetlands in Australia*’ (ANCA 1996, Environment Australia 2001; Elscot *et al.* 2009).
- Inclusion in a current or former Natural Diversity Recovery Catchment (Government of Western Australia 1996a; Wallace & Lloyd 2008).

Data collected (mainly opportunistically) *outside* the six routine (nine-day) monitoring periods of September, November, January, March, May and July each year are not shown.

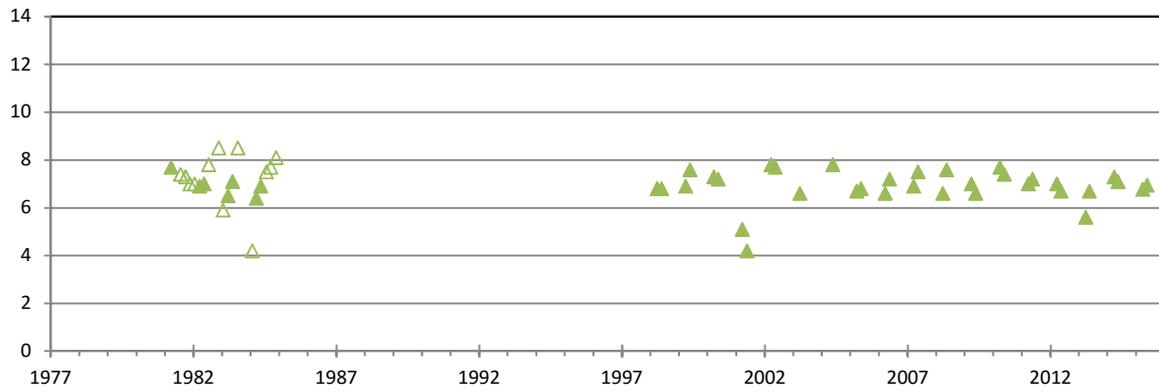
Nutrient (Total N & P) data from most currently-monitored wetlands, and water level, salinity, pH and nutrient data from historically-monitored SWWMP wetlands, may be found in Lane *et al.* (2009a)

## ALBANY 26385

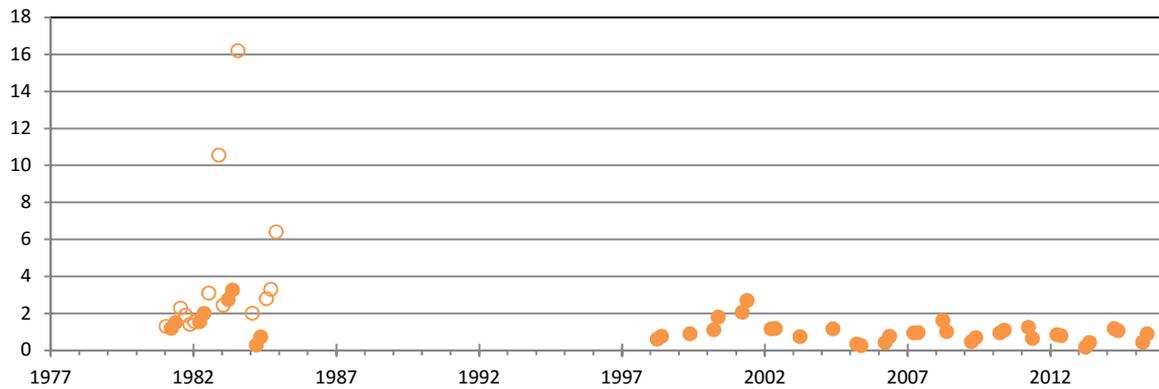
**Depth (mLD)**



**pH**



**Salinity (ppt)**



**Notes:**

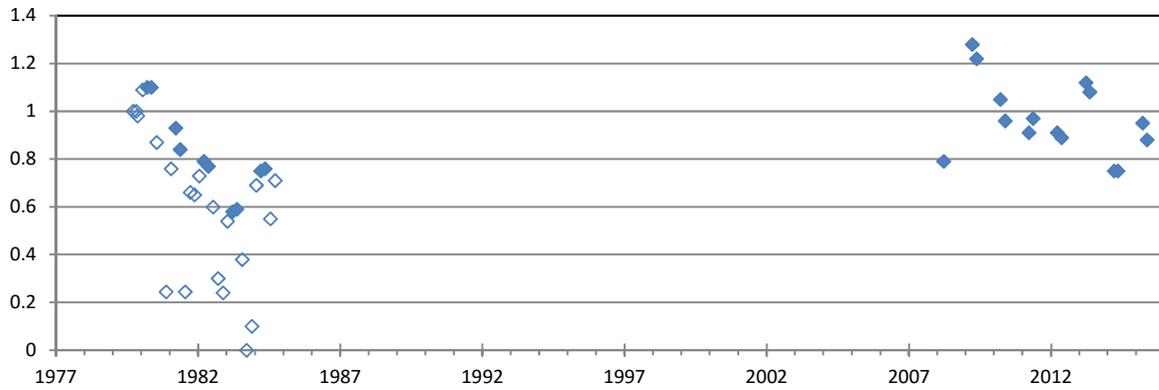
1. Year labels are positioned at 1<sup>st</sup> July each year.
2. Data are from Sept and Nov (filled symbols) and Jan, Mar, May & July (empty symbols) routine monitoring periods only.

Albany 26385 is a component of the 'Lake Pleasant View System', which is listed in the 'Directory of Important Wetlands in Australia'.

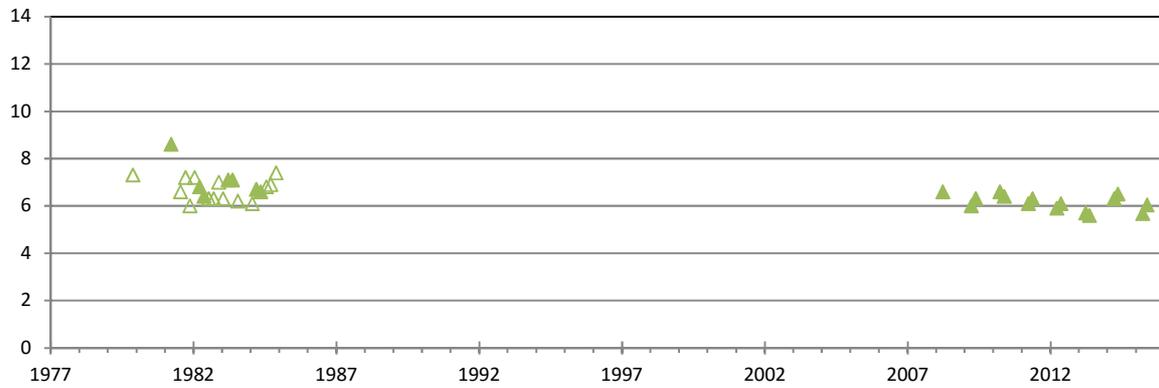
Albany 26385 is in the Albany District of the South Coast DPaW Region.

## ALBANY 27157

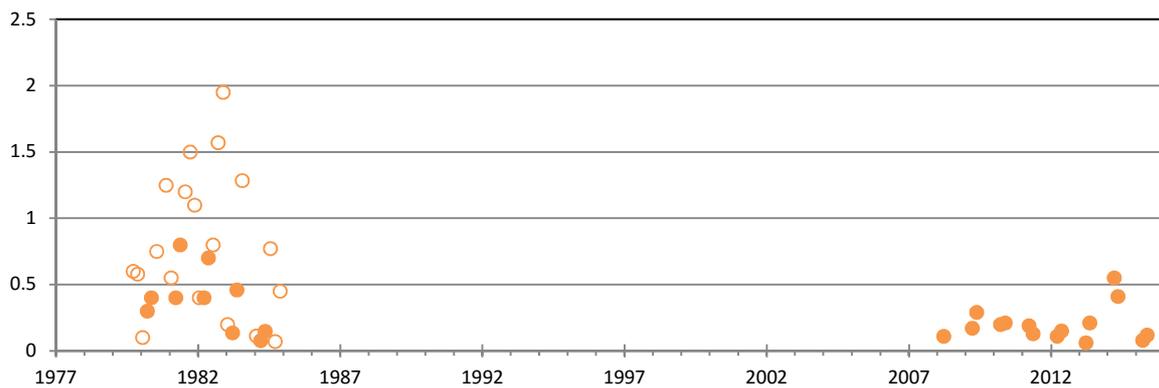
Depth (mLD)



pH



Salinity (ppt)



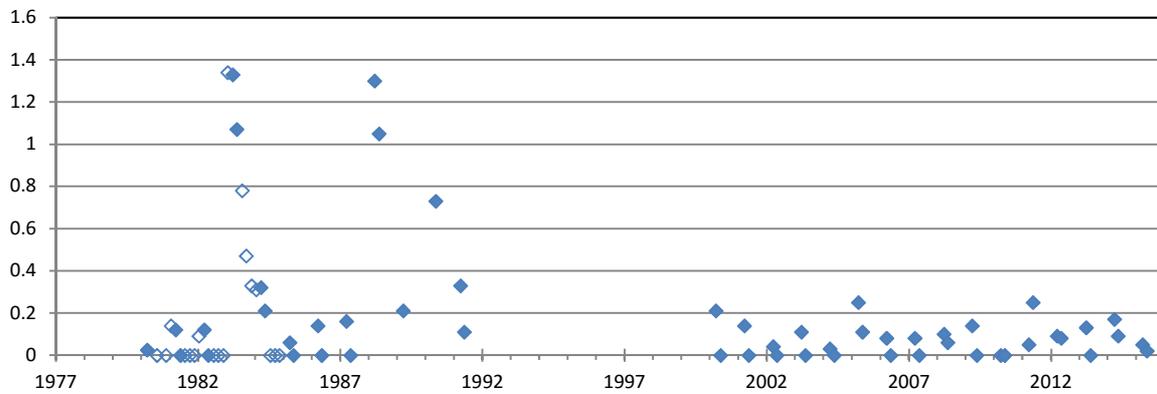
**Notes:**

1. Year labels are positioned at 1<sup>st</sup> July each year.
2. Data are from Sept and Nov (filled symbols) and Jan, Mar, May & July (empty symbols) routine monitoring periods only.

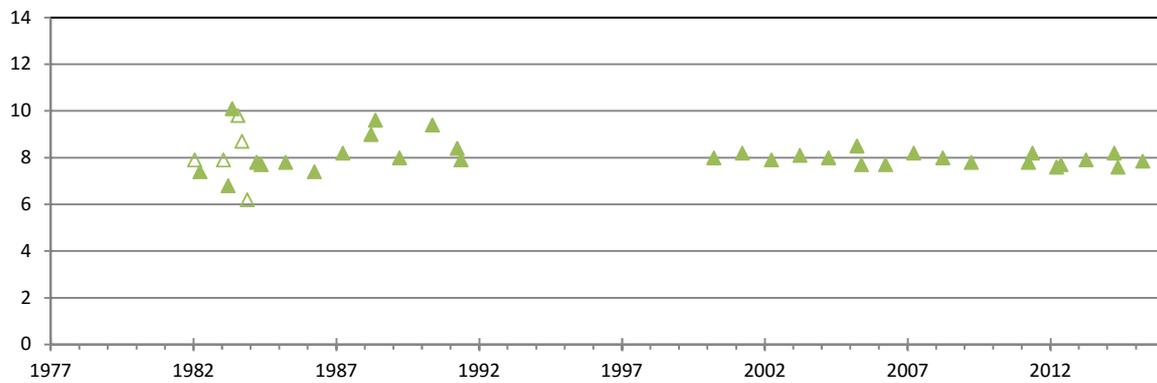
Albany 27157 is in the Albany District of the South Coast DPaW Region.

## ALTHAM<sup>IM</sup>

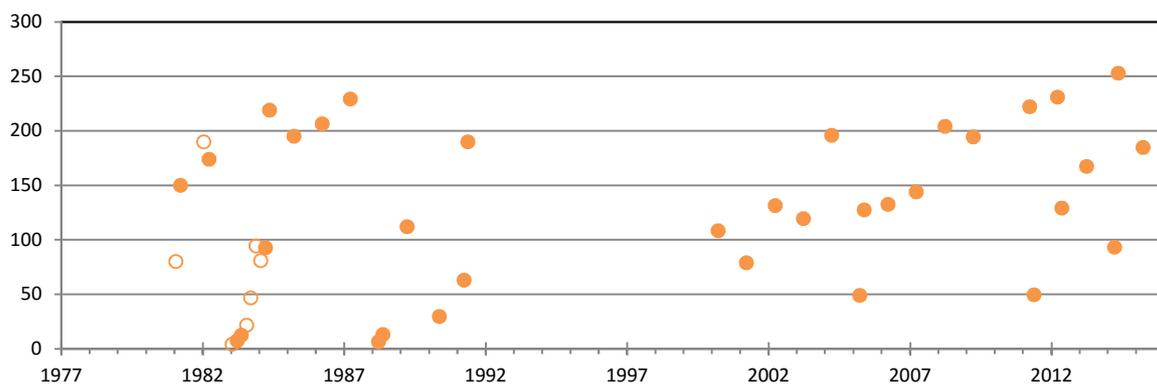
### Depth (mLD)



### pH



### Salinity (ppt)



#### Notes:

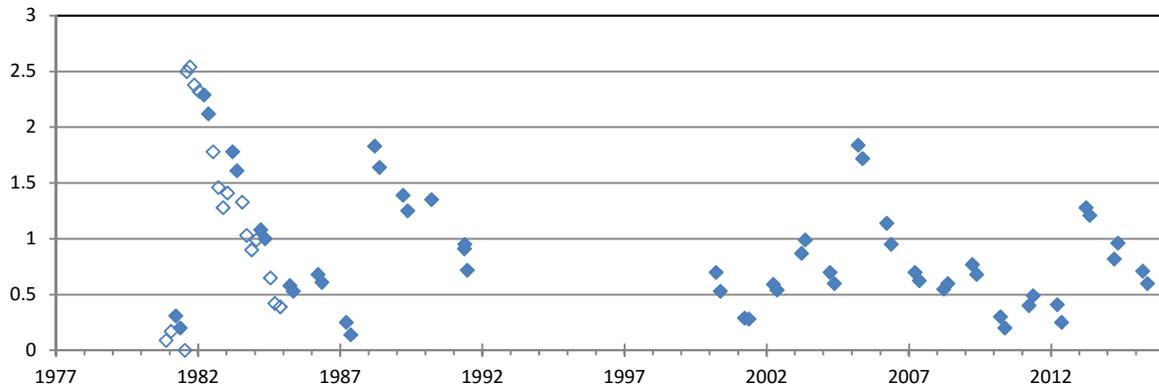
- <sup>IM</sup> indicates this is one of 25 wetlands Intensively Monitored for additional biological and physico-chemical attributes.
- Year labels are positioned at 1<sup>st</sup> July each year.
- Data are from Sept and Nov (filled symbols) and Jan, Mar, May & July (empty symbols) routine monitoring periods only.

Altham is a component of the 'Lake Grace System', which is listed in the 'Directory of Important Wetlands in Australia'.

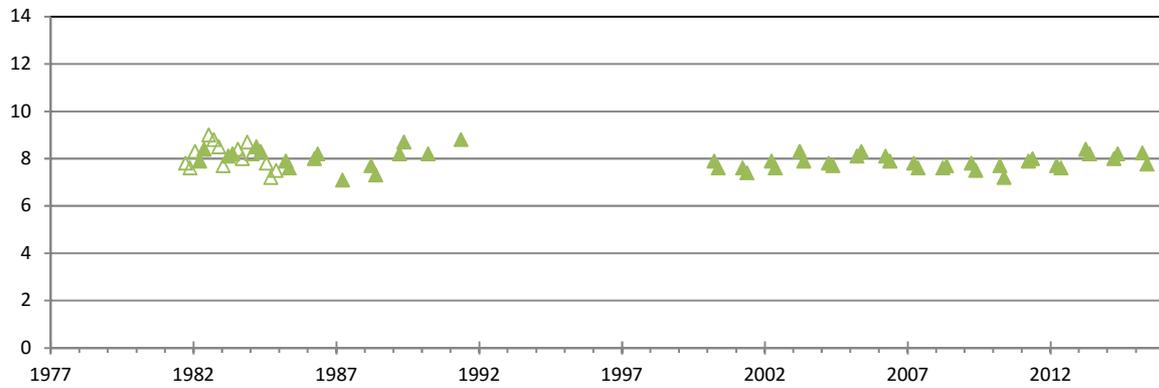
Altham is in the Southern Wheatbelt geographical area (headquartered in Narrogin) of the Wheatbelt DPaW Region.

## ANDERSON

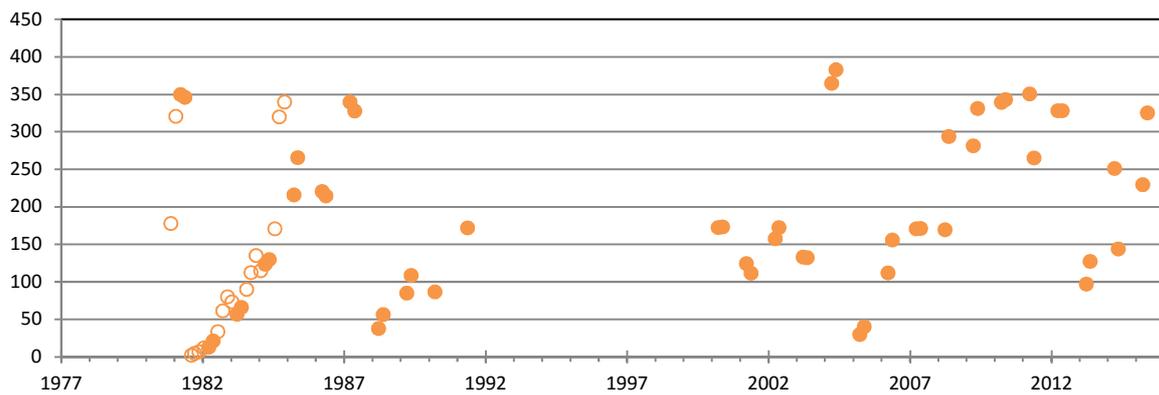
Depth (mLD)



pH



Salinity (ppt)



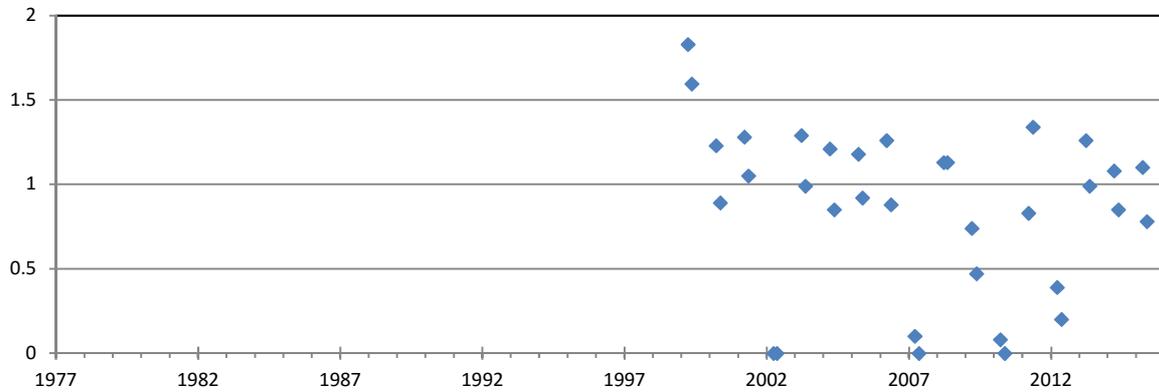
**Notes:**

1. Year labels are positioned at 1<sup>st</sup> July each year.
2. Data are from Sept and Nov (filled symbols) and Jan, Mar, May & July (empty symbols) routine monitoring periods only.

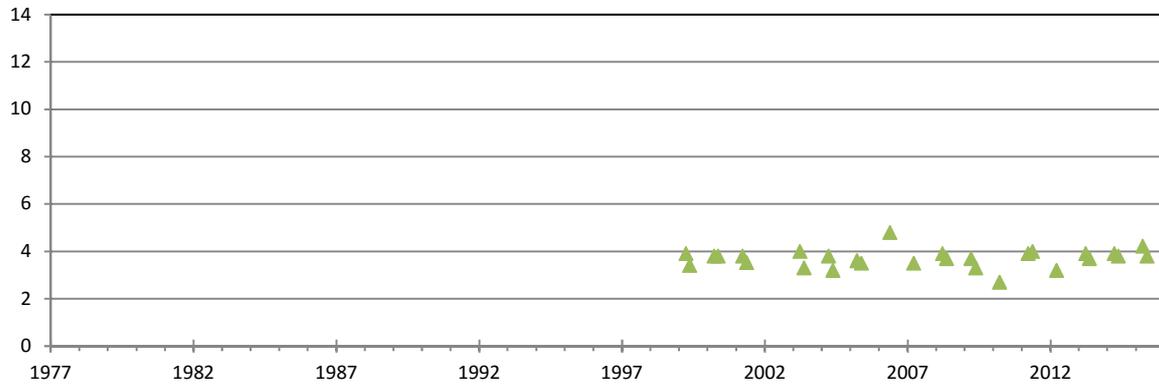
Anderson is in the Southern Wheatbelt geographical area (headquartered in Narrogin) of the Wheatbelt DPAW Region.

## ARDATH<sup>IM</sup>

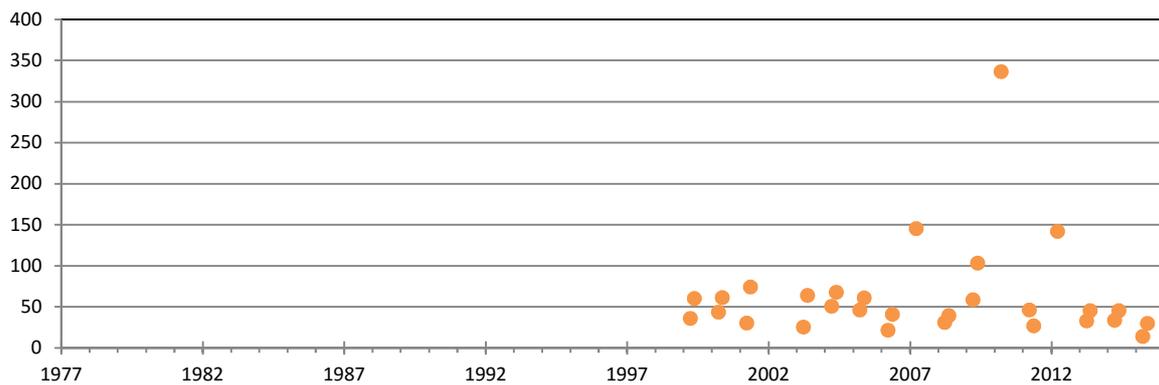
Depth (mLD)



pH



Salinity (ppt)



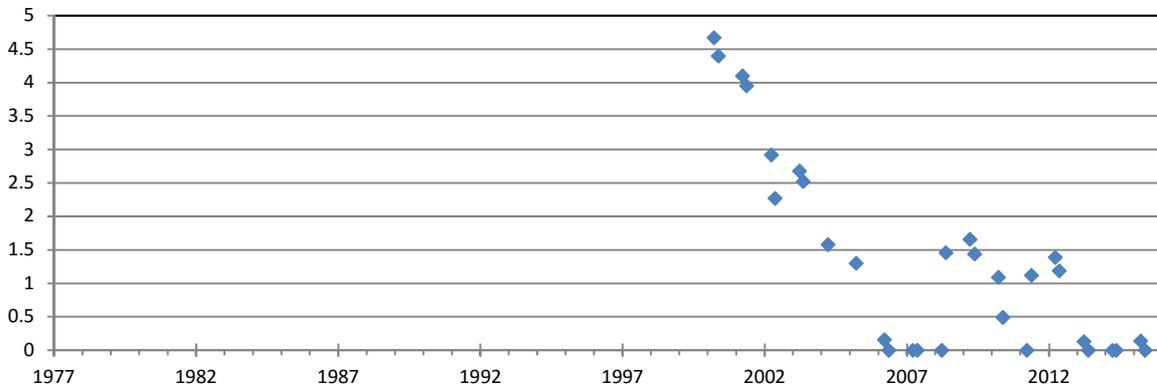
**Notes:**

1. <sup>IM</sup> indicates this is one of 25 wetlands Intensively Monitored for additional biological and physico-chemical attributes.
2. Year labels are positioned at 1<sup>st</sup> July each year.
3. Data are from September and November routine monitoring periods only.

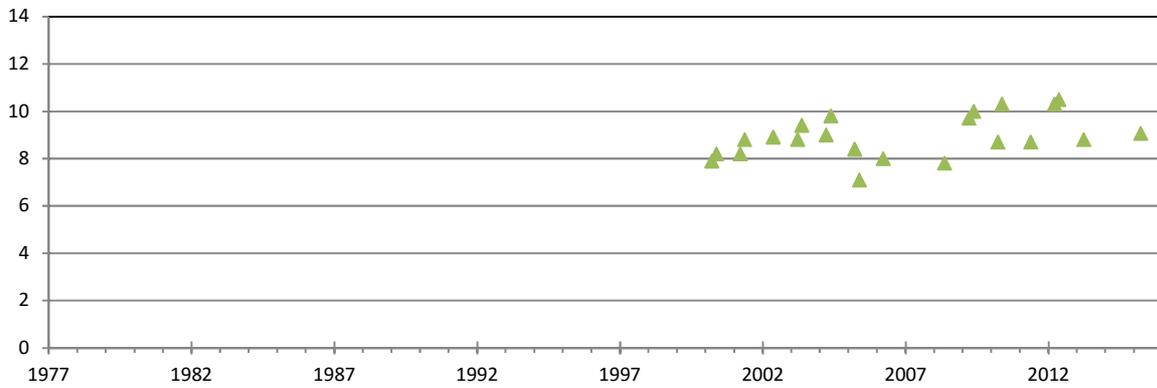
Ardath is in the Central District (headquartered in Merredin) of the Wheatbelt DPaw Region.

## ATKINS YATE

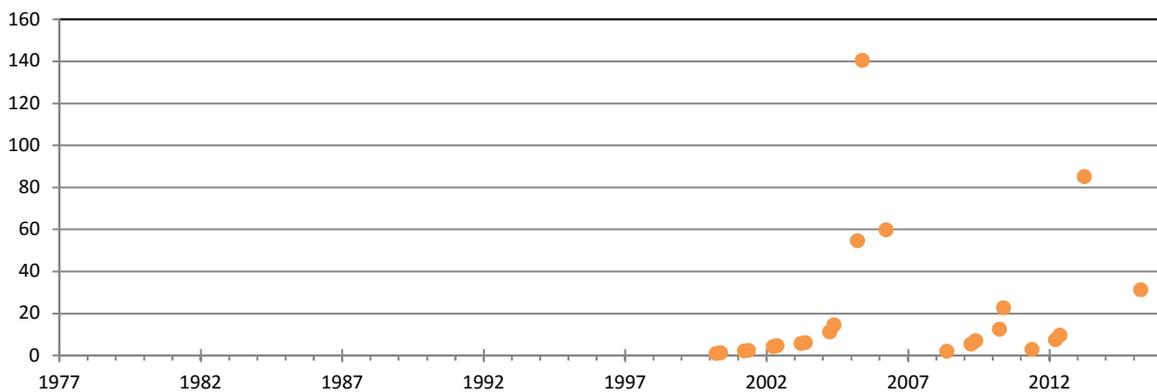
**Depth (mLD)**



**pH**



**Salinity (ppt)**



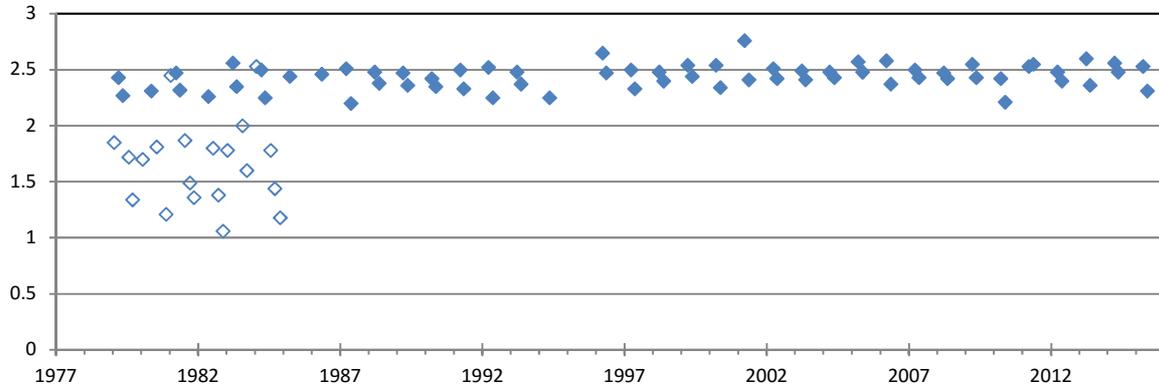
**Notes:**

1. Year labels are positioned at 1<sup>st</sup> July each year.
2. Data are from September and November routine monitoring periods only.

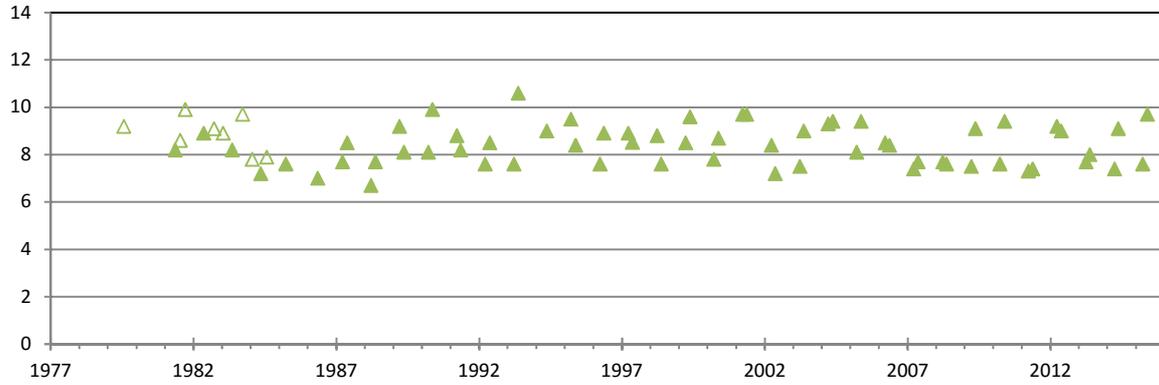
Atkins Yate is in the Southern Wheatbelt geographical area (headquartered in Narrogin) of the Wheatbelt DPaW Region.

# BAMBUN

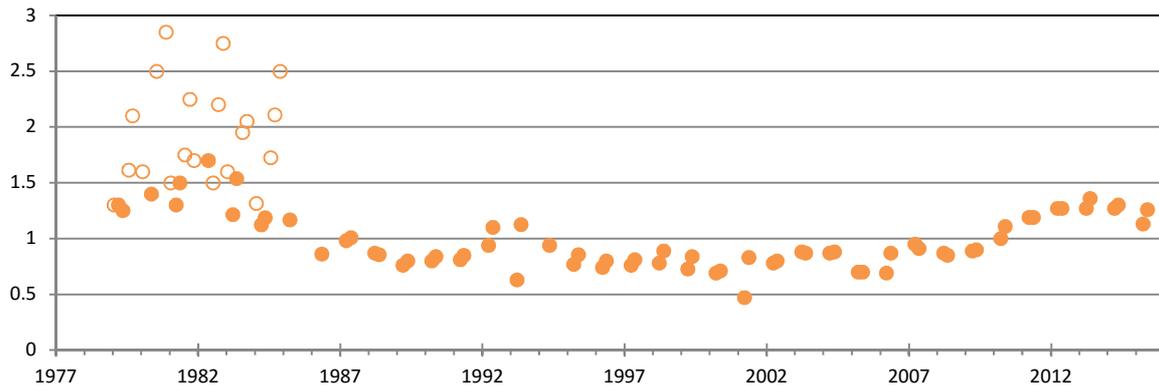
Depth (mLD)



pH



Salinity (ppt)



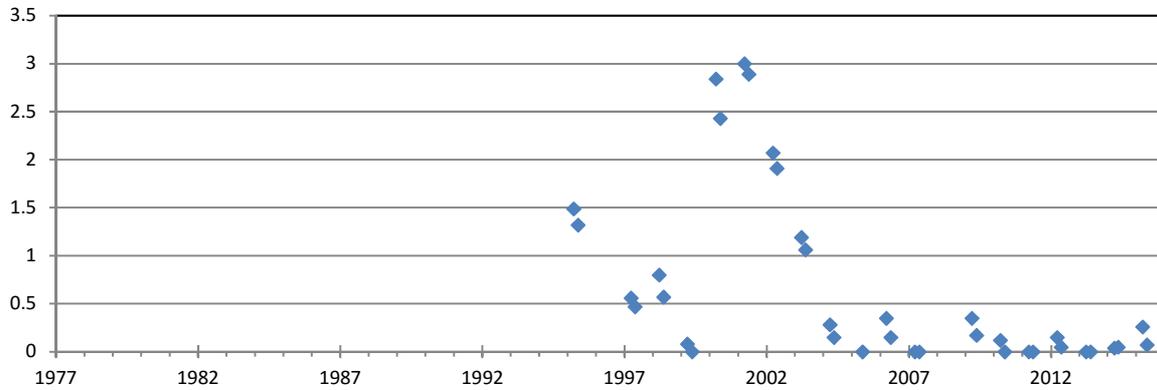
**Notes:**

1. Year labels are positioned at 1<sup>st</sup> July each year.
2. Data are from Sept and Nov (filled symbols) and Jan, Mar, May & July (empty symbols) routine monitoring periods only.

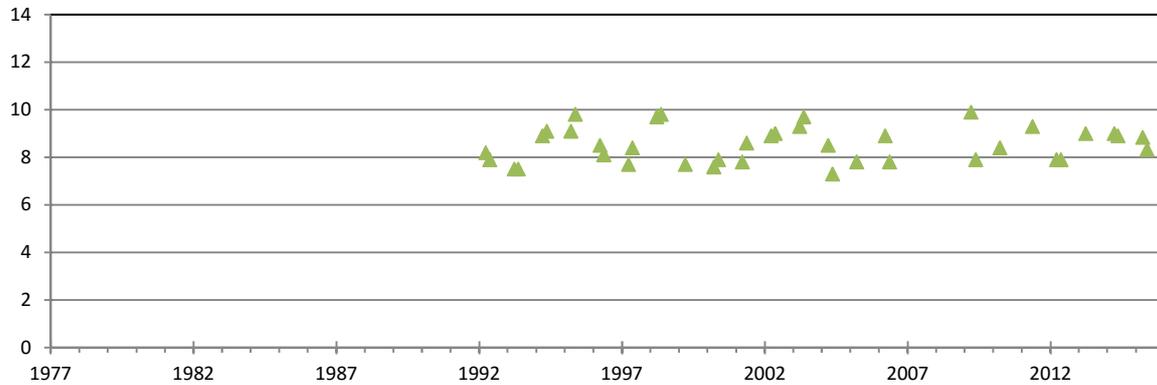
Bambun is in the Swan Coastal District (headquartered in Wanneroo) of the Swan DPaW Region.

## BENNETTS<sup>IM</sup>

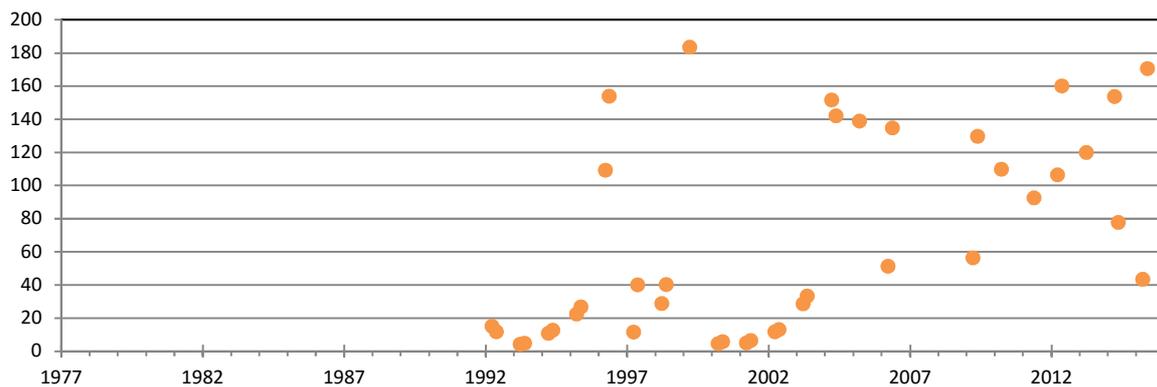
Depth (mLD)



pH



Salinity (ppt)



### Notes:

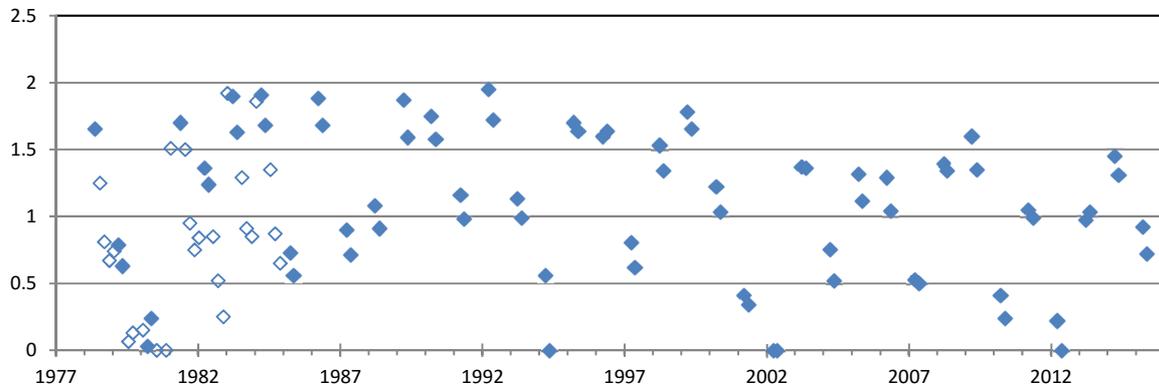
1. <sup>IM</sup> indicates this is one of 25 wetlands Intensively Monitored for additional biological and physico-chemical attributes.
2. Year labels are positioned at 1<sup>st</sup> July each year.
3. Data are from September and November routine monitoring periods only.

Bennetts Lake has been nominated for listing in the 'Directory of Important Wetlands in Australia' (Elscot *et al.* 2009).

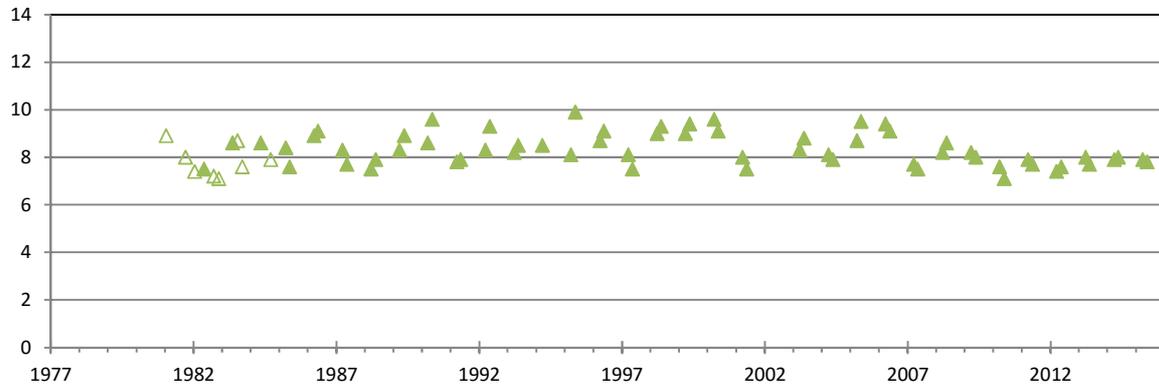
Bennetts is in the Southern Wheatbelt geographical area (headquartered in Narrogin) of the Wheatbelt DPaW Region.

## BEVERLEY

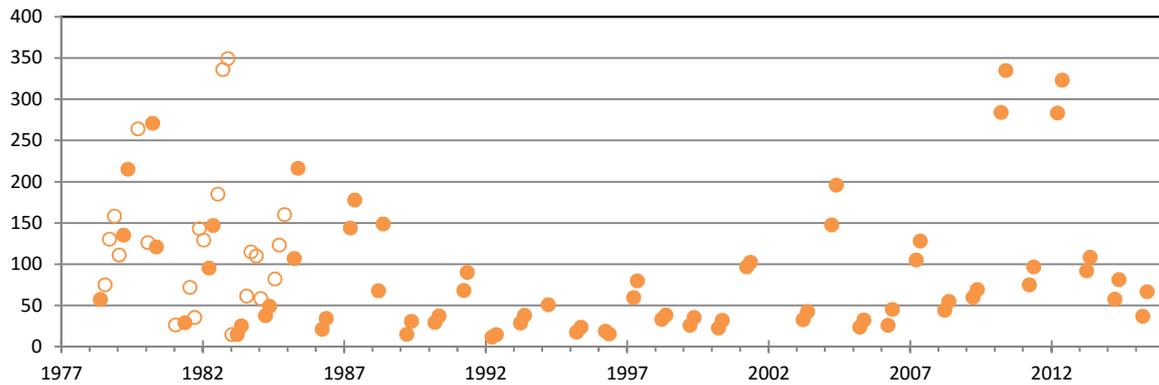
Depth (mLD)



pH



Salinity (ppt)



**Notes:**

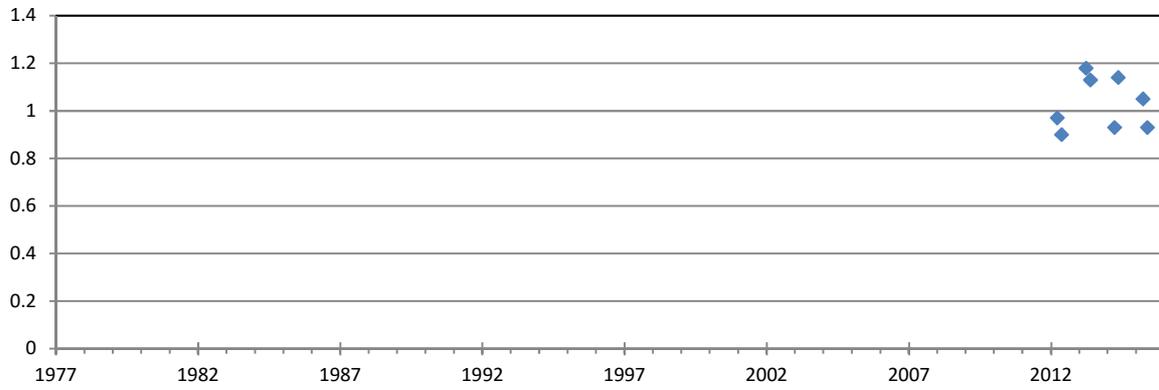
1. Year labels are positioned at 1<sup>st</sup> July each year.
2. Data are from Sept and Nov (filled symbols) and Jan, Mar, May & July (empty symbols) routine monitoring periods only.

Beverley Lakes is also known as Yenyenning Lakes.

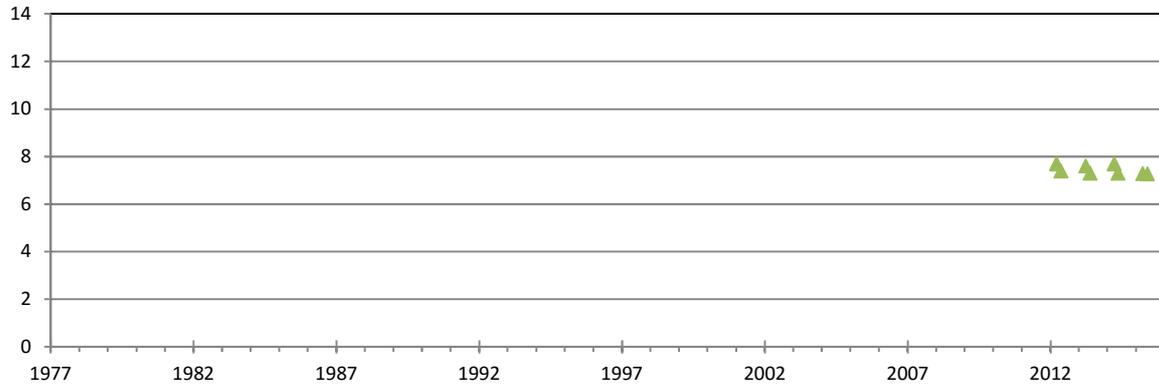
Beverley is in the Central District (headquartered in Merredin) of the Wheatbelt DPaW Region.

# BIG BOOM

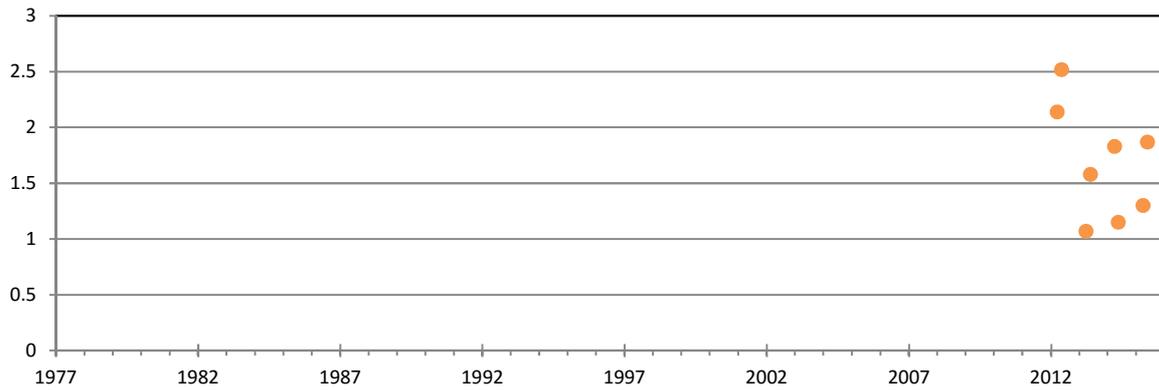
Depth (mLD)



pH



Salinity (ppt)



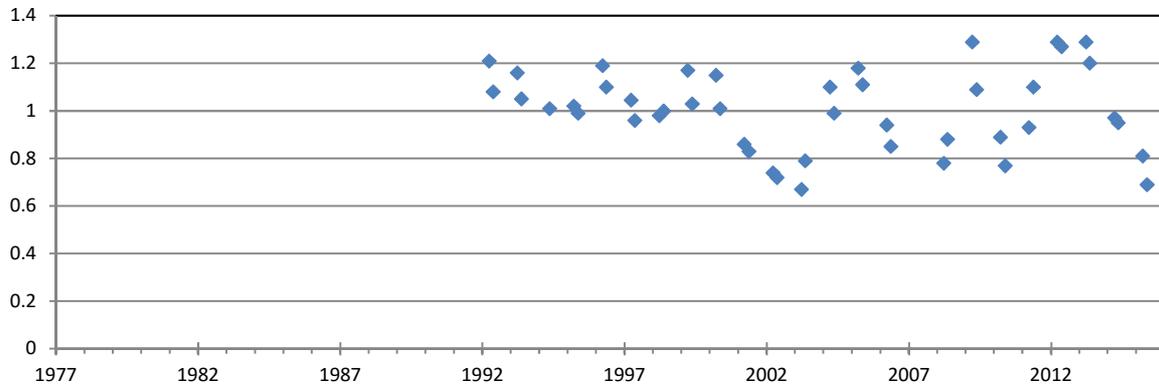
**Notes:**

1. Year labels are positioned at 1<sup>st</sup> July each year.
2. Data are from September and November routine monitoring periods only.

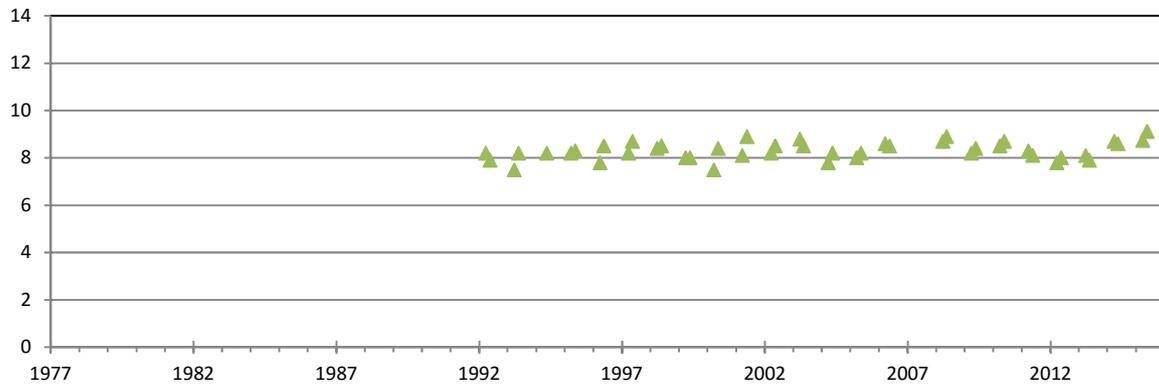
Big Boom is in the Esperance District of the South Coast DPaw Region.

## BOAT HARBOUR 1

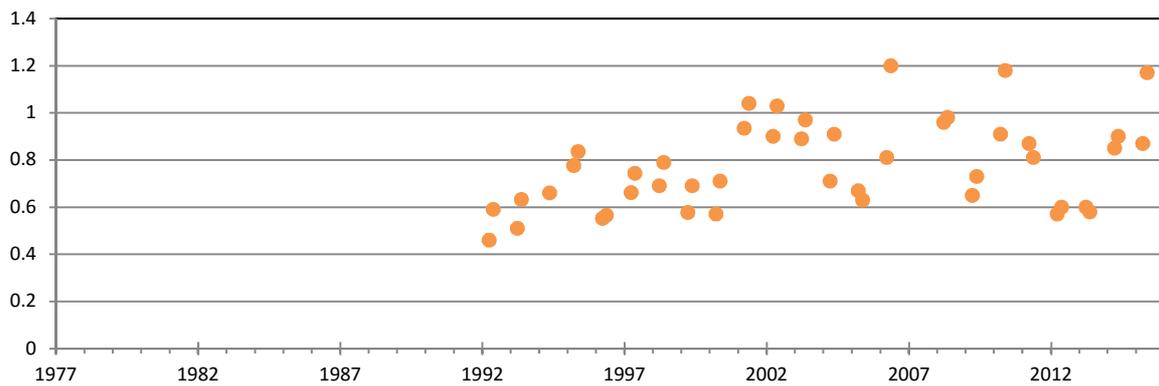
**Depth (mLD)**



**pH**



**Salinity (ppt)**



**Notes:**

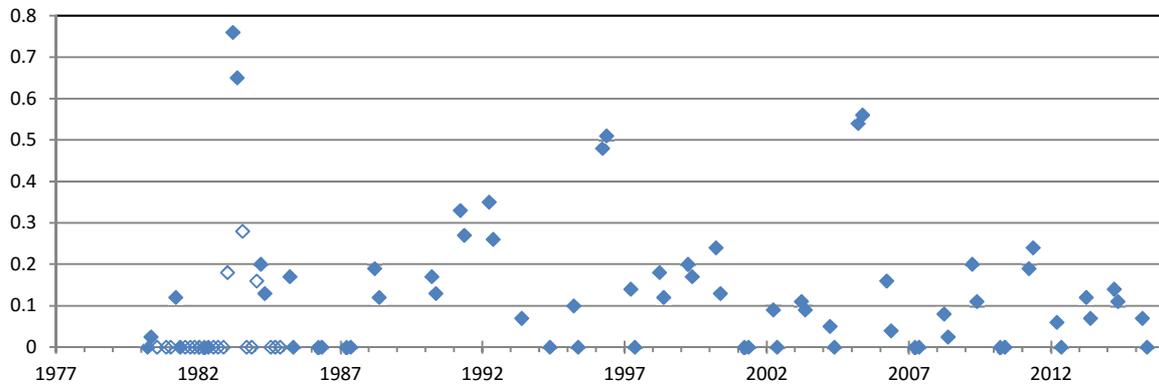
1. Year labels are positioned at 1<sup>st</sup> July each year.
2. Data are from September and November routine monitoring periods only.

Boat Harbour 1 is a component of the 'Owingup Swamp System', which is listed in the 'Directory of Important Wetlands in Australia'.

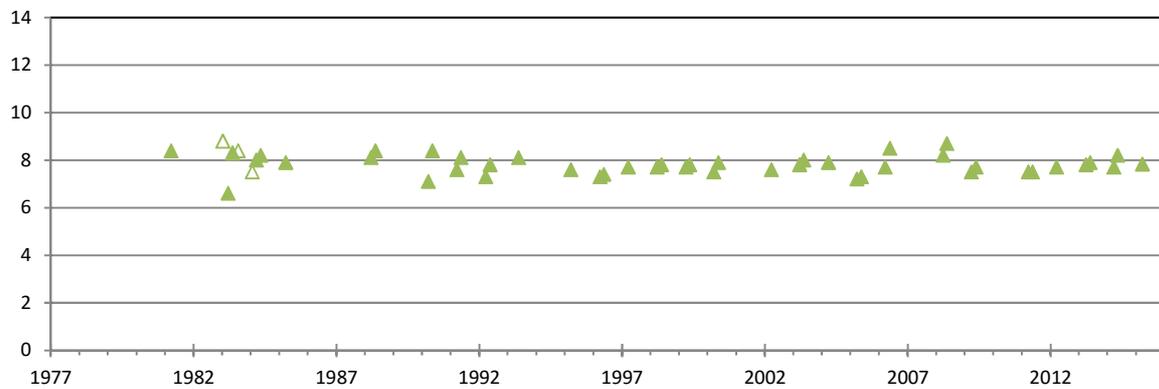
Boat Harbour 1 is in the Frankland District (headquartered in Walpole) of the Warren DPaW Region.

## BOYUP BROOK 18239 <sup>IM</sup>

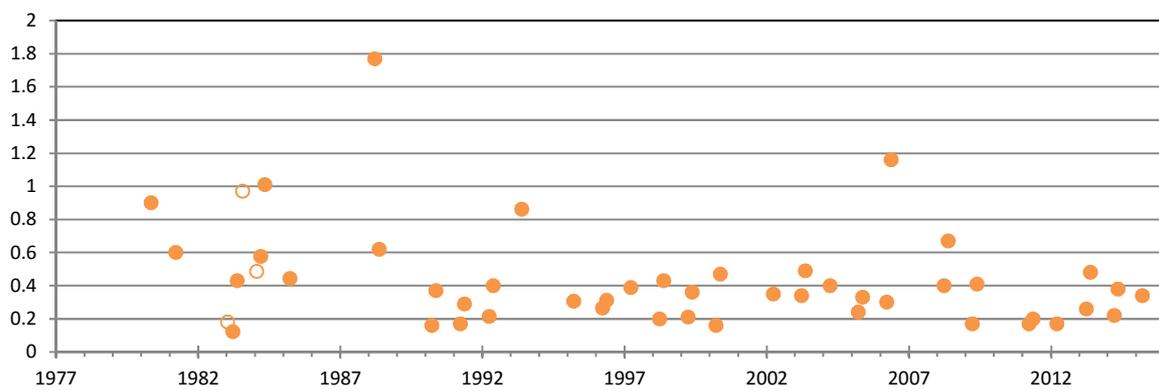
**Depth (mLD)**



**pH**



**Salinity (ppt)**



**Notes:**

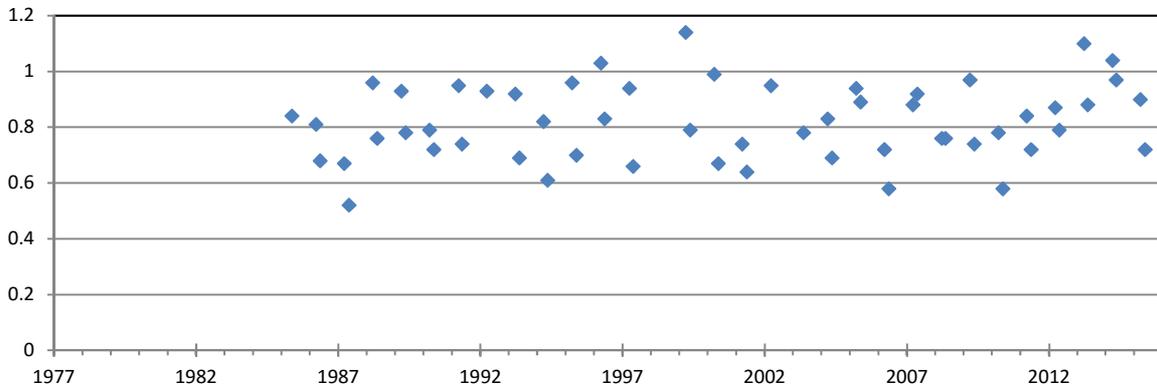
1. <sup>IM</sup> indicates this is one of 25 wetlands Intensively Monitored for additional biological and physico-chemical attributes.
2. Year labels are positioned at 1<sup>st</sup> July each year.
3. Data are from Sept and Nov (filled symbols) and Jan, Mar, May & July (empty symbols) routine monitoring periods only.

Boyup Brook 18239 is also known as Kulicup Swamp.

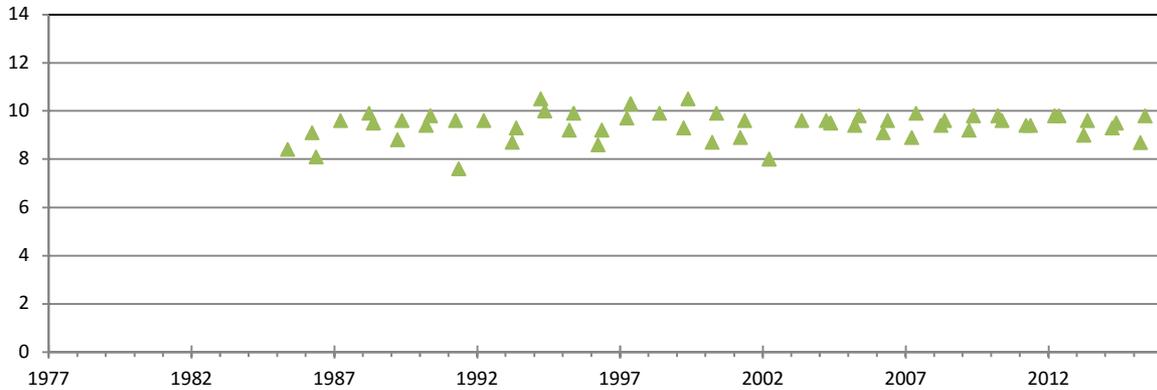
Boyup Brook 18239 is in the Blackwood District (headquartered in Busselton) of the South West DPaW Region.

# BROADWATER

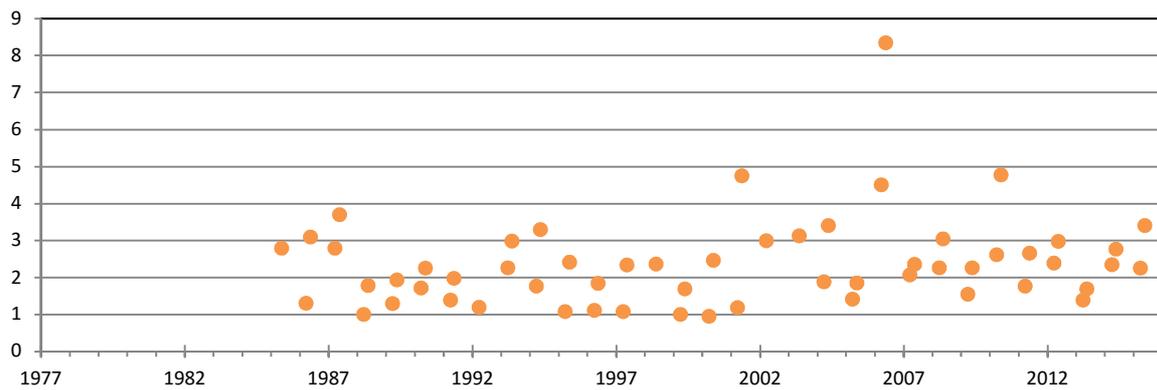
Depth (mLD)



pH



Salinity (ppt)



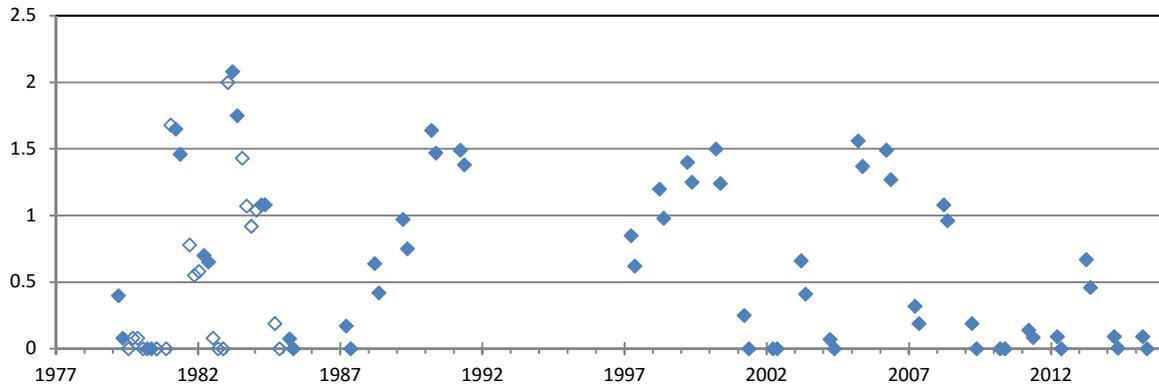
**Notes:**

1. Year labels are positioned at 1<sup>st</sup> July each year.
2. Data are from September and November routine monitoring periods only.

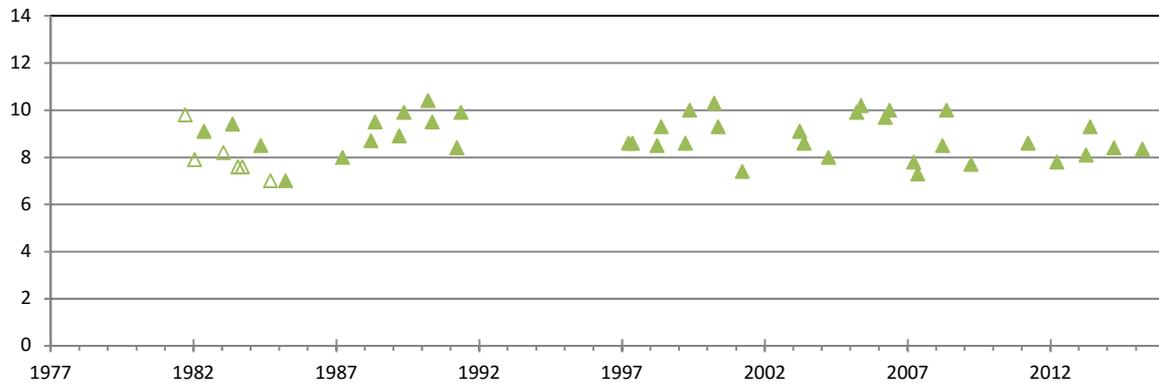
Broadwater is in the Blackwood District (headquartered in Busselton) of the South West DPaW Region.

# BROWN

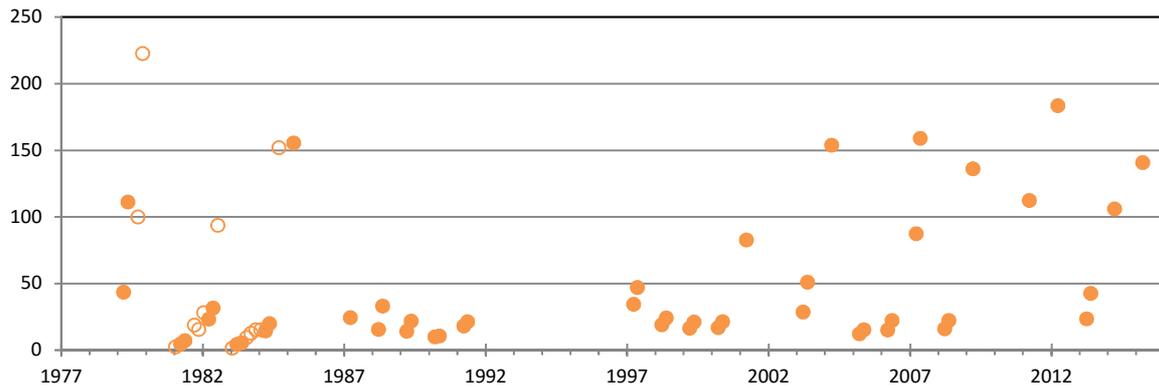
Depth (mLD)



pH



Salinity (ppt)



**Notes:**

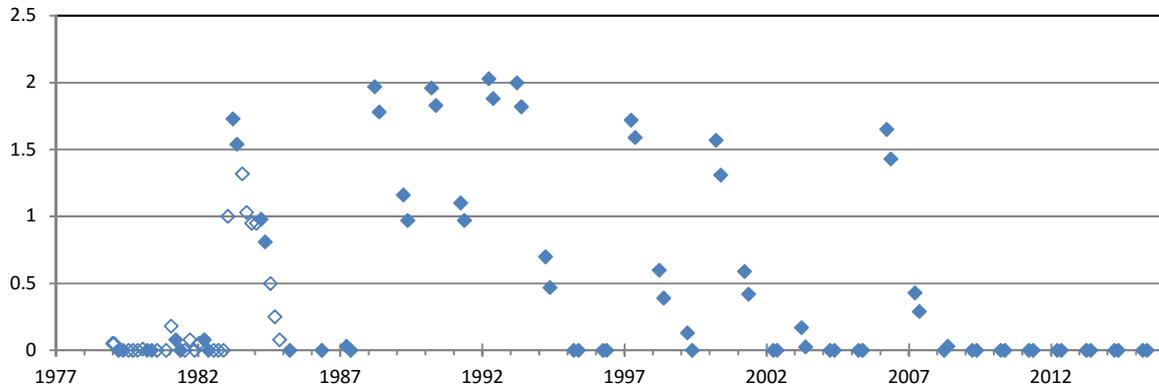
1. Year labels are positioned at 1<sup>st</sup> July each year.
2. Data are from Sept and Nov (filled symbols) and Jan, Mar, May & July (empty symbols) routine monitoring periods only.

Brown is a component of the 'Yealering Lakes System', which is listed in the 'Directory of Important Wetlands in Australia'.

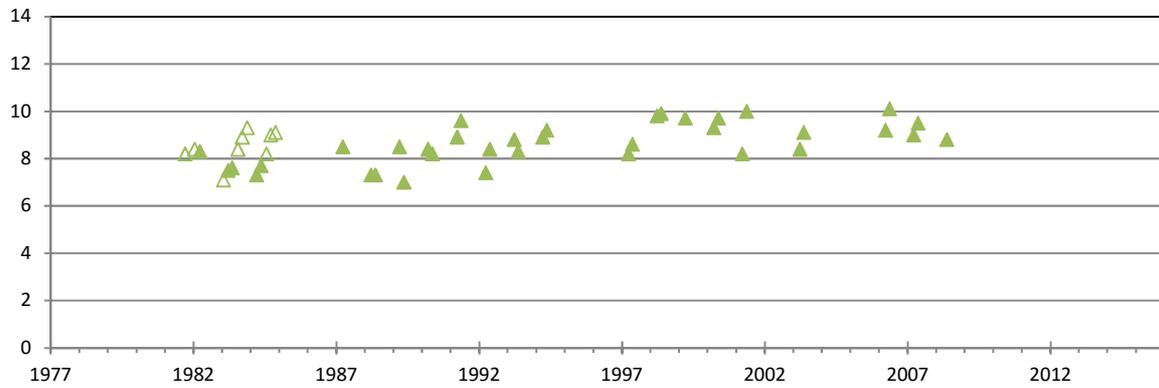
Brown is in the Southern Wheatbelt geographical area (headquartered in Narrogin) of the Wheatbelt DPaw Region.

## BRYDE <sup>IM</sup>

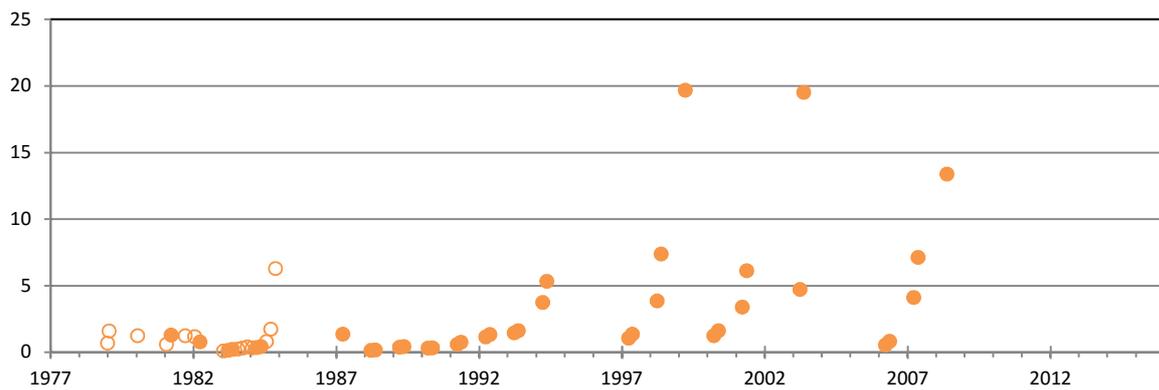
**Depth (mLD)**



**pH**



**Salinity (ppt)**



**Notes:**

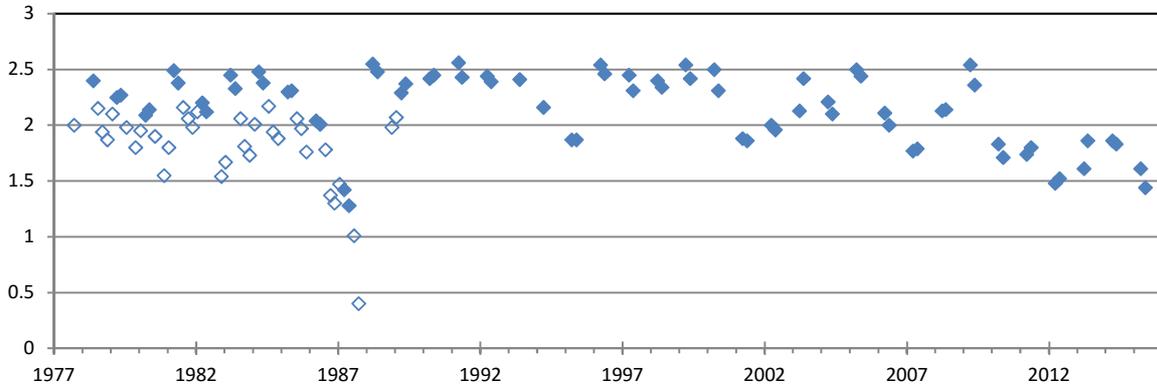
1. <sup>IM</sup> indicates this is one of 25 wetlands Intensively Monitored for additional biological and physico-chemical attributes.
2. Year labels are positioned at 1<sup>st</sup> July each year.
3. Data are from Sept and Nov (filled symbols) and Jan, Mar, May & July (empty symbols) routine monitoring periods only.

Bryde is part of the 'Lake Bryde – East Lake Bryde System' listed in the 'Directory of Important Wetlands in Australia'.

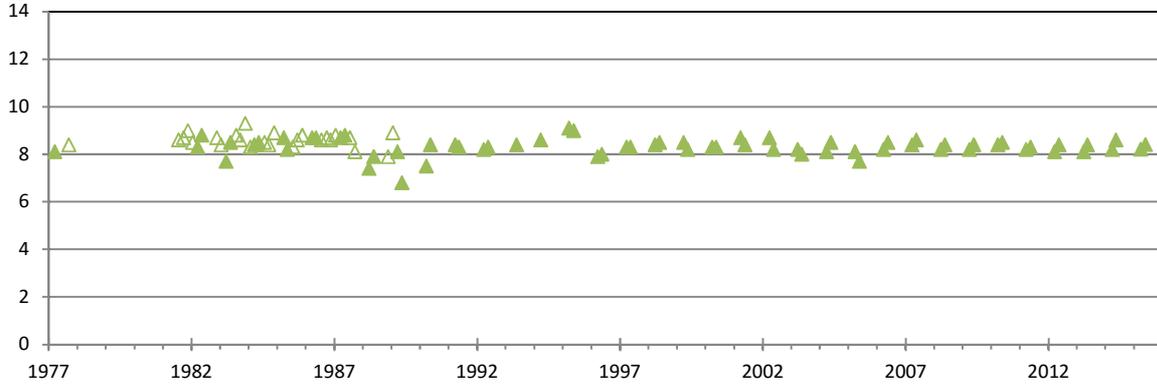
Bryde is within the Lake Bryde Natural Diversity Recovery Catchment and is in the Southern Wheatbelt geographical area (headquartered in Narrogin) of the Wheatbelt DPaW Region.

## BYENUP

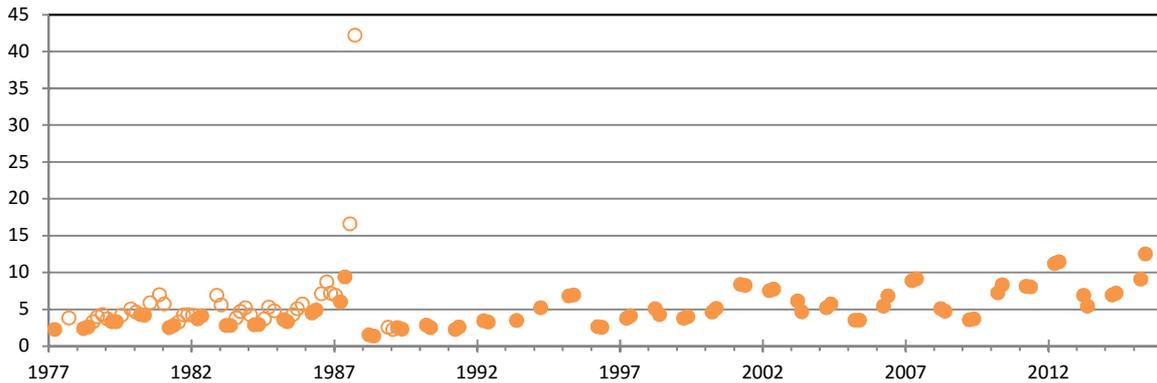
**Depth (mLD)**



**pH**



**Salinity (ppt)**



**Notes:**

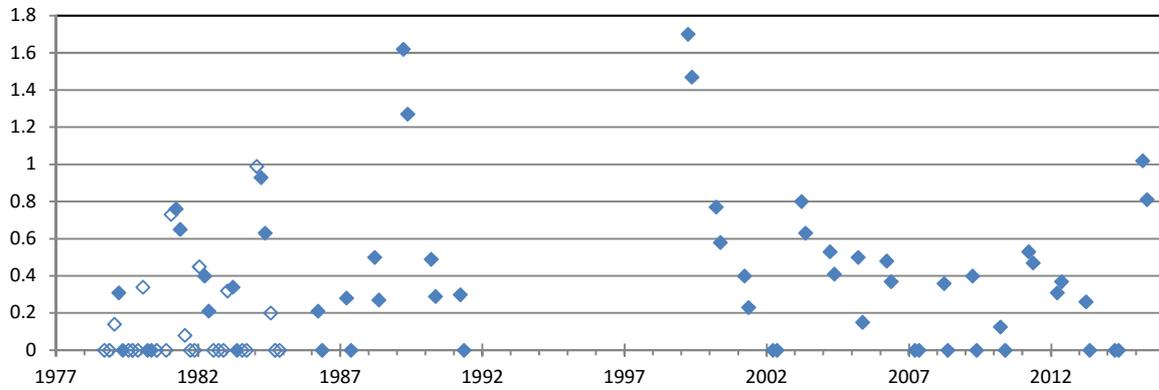
1. Year labels are positioned at 1<sup>st</sup> July each year.
2. Data are from Sept and Nov (filled symbols) and Jan, Mar, May & July (empty symbols) routine monitoring periods only.

Byenup is a component of the ‘Muir-Byenup System’, which is listed as a Wetland of International Importance under the ‘Ramsar’ Convention on Wetlands, and is also part of the ‘Byenup Lagoon System’ listed in the ‘Directory of Important Wetlands in Australia’.

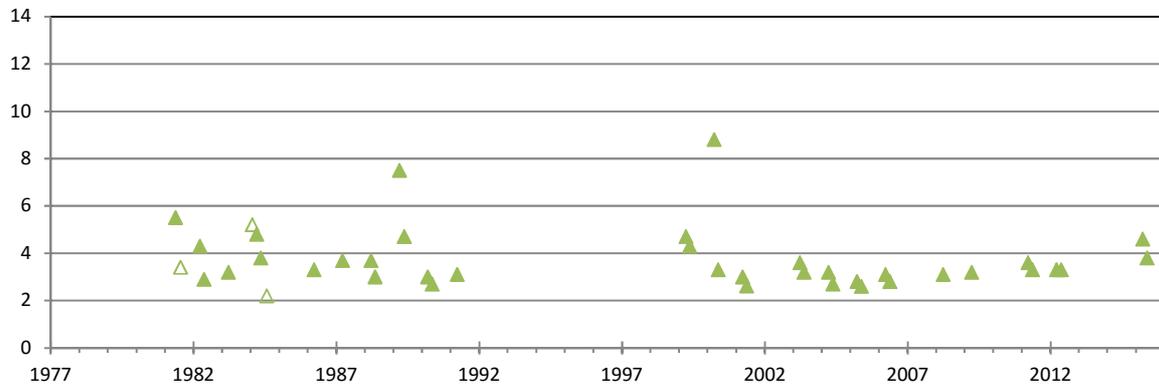
Byenup is within the former Muir-Unicup Natural Diversity Recovery Catchment and is in the Donnelly District (headquartered in Pemberton) of the Warren DPaW Region.

## CAMPION<sup>IM</sup>

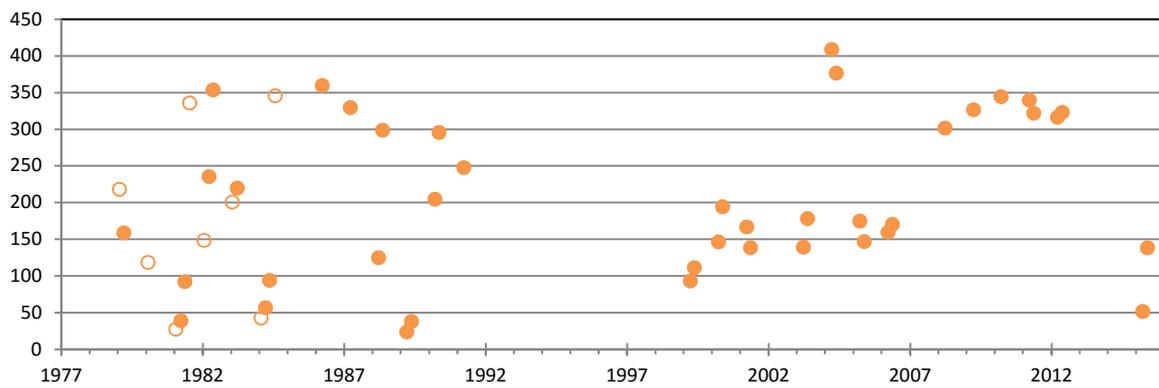
**Depth (mLD)**



**pH**



**Salinity (ppt)**



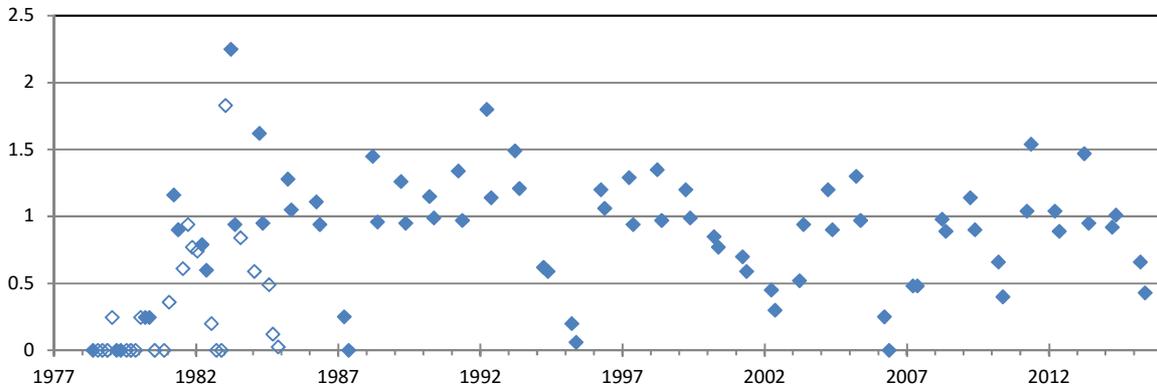
**Notes:**

1. <sup>IM</sup> indicates this is one of 25 wetlands Intensively Monitored for additional biological and physico-chemical attributes.
2. Year labels are positioned at 1<sup>st</sup> July each year.
3. Data are from Sept and Nov (filled symbols) and Jan, Mar, May & July (empty symbols) routine monitoring periods only.

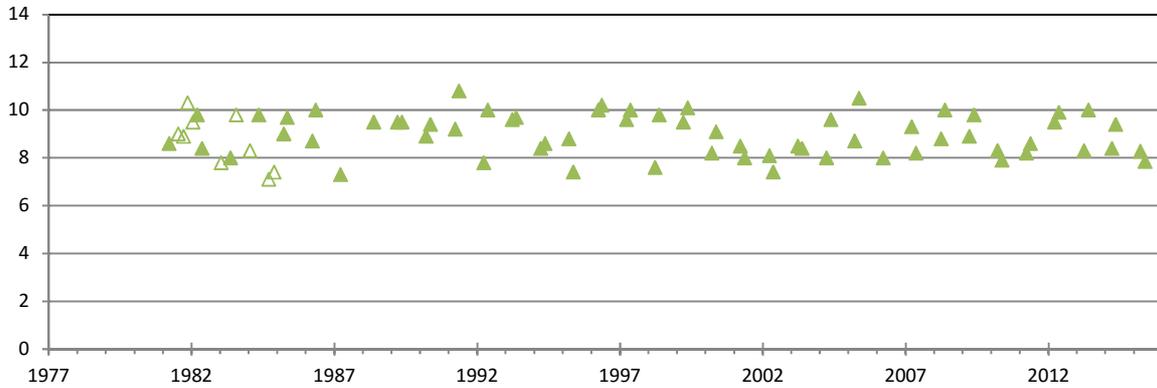
Campion is in the Central District (headquartered in Merredin) of the Wheatbelt DPaW Region.

# CASUARINA

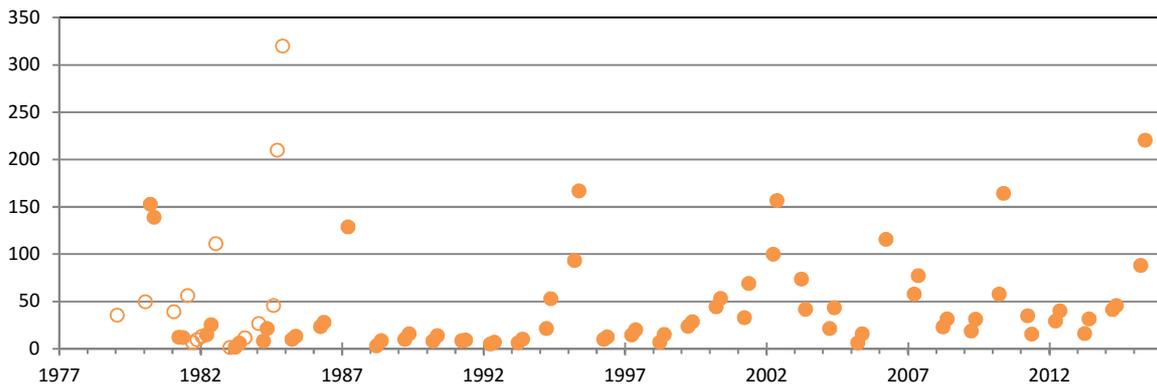
Depth (mLD)



pH



Salinity (ppt)



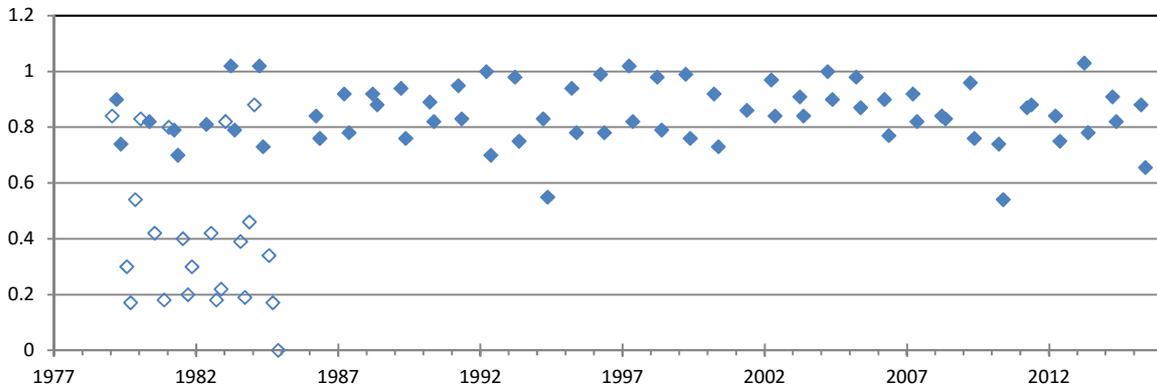
**Notes:**

1. Year labels are positioned at 1<sup>st</sup> July each year.
2. Data are from Sept and Nov (filled symbols) and Jan, Mar, May & July (empty symbols) routine monitoring periods only.

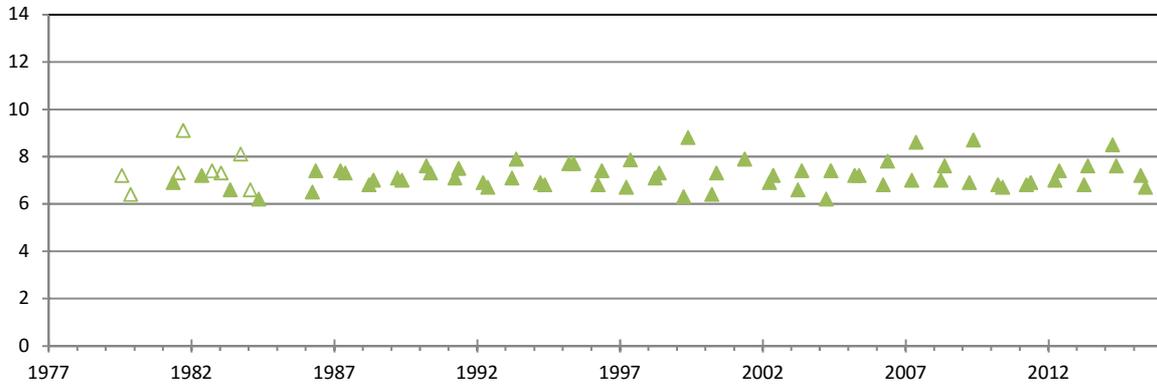
Casuarina is in the Southern Wheatbelt geographical area (headquartered in Narrogin) of the Wheatbelt DPaW Region.

## CHANDALA

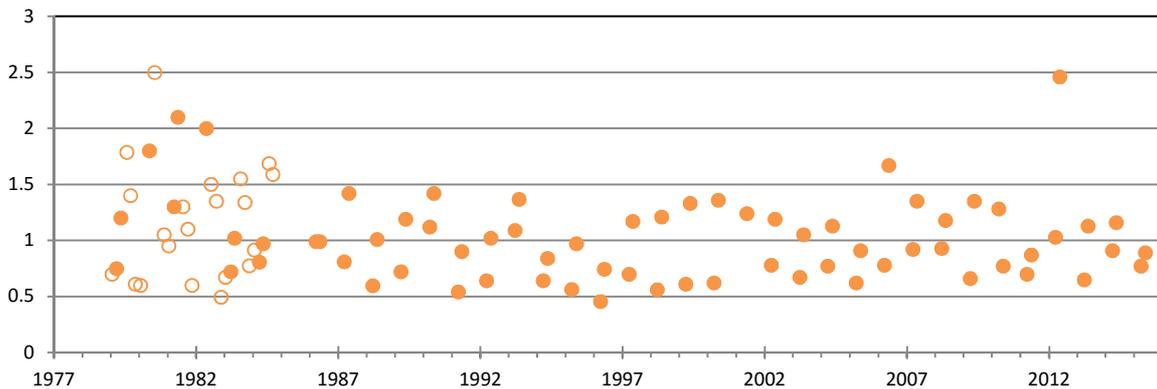
**Depth (mLD)**



**pH**



**Salinity (ppt)**



**Notes:**

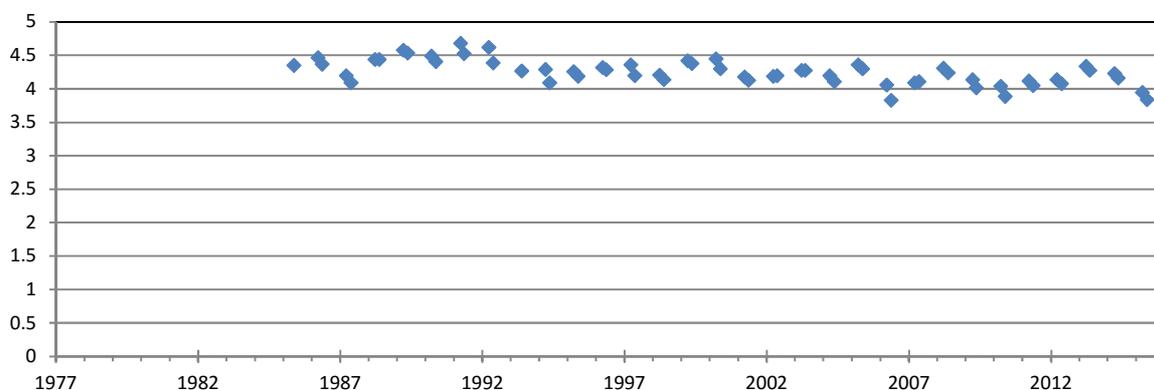
1. Year labels are positioned at 1<sup>st</sup> July each year.
2. Data are from Sept and Nov (filled symbols) and Jan, Mar, May & July (empty symbols) routine monitoring periods only.

Chandala Swamp is listed in the 'Directory of Important Wetlands in Australia'.

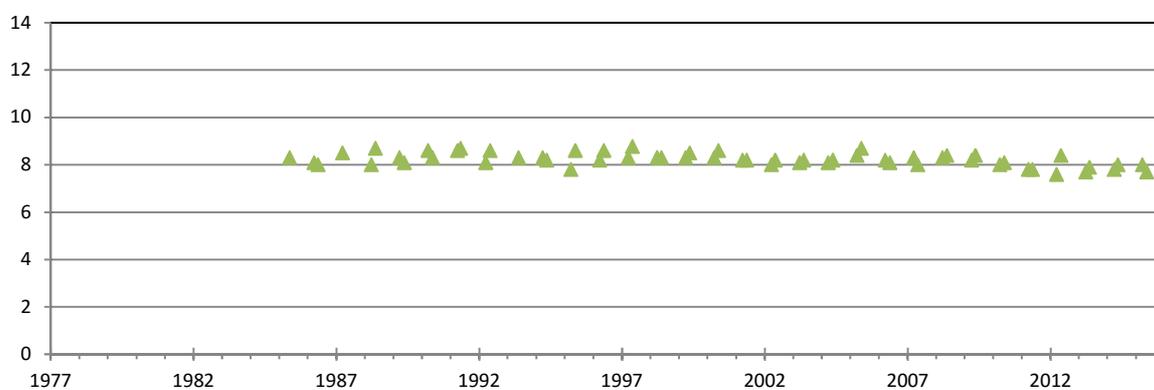
Chandala is in the Perth Hills District (headquartered in Mundaring) of the Swan DPaW Region.

## CLIFTON (with Depth axis 0-5m)

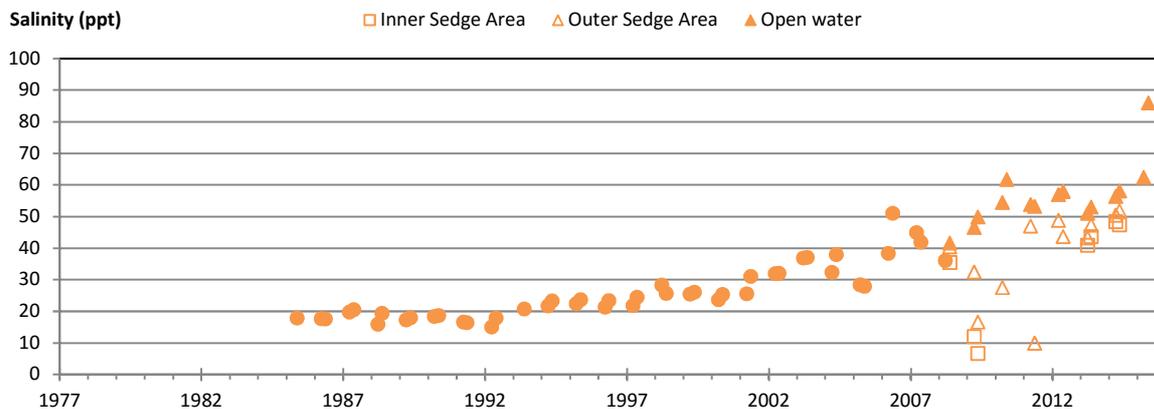
Depth (mLD)



pH



Salinity (ppt)



**Notes:**

1. Year labels are positioned at 1<sup>st</sup> July each year.
2. Data are from September and November routine monitoring periods only.

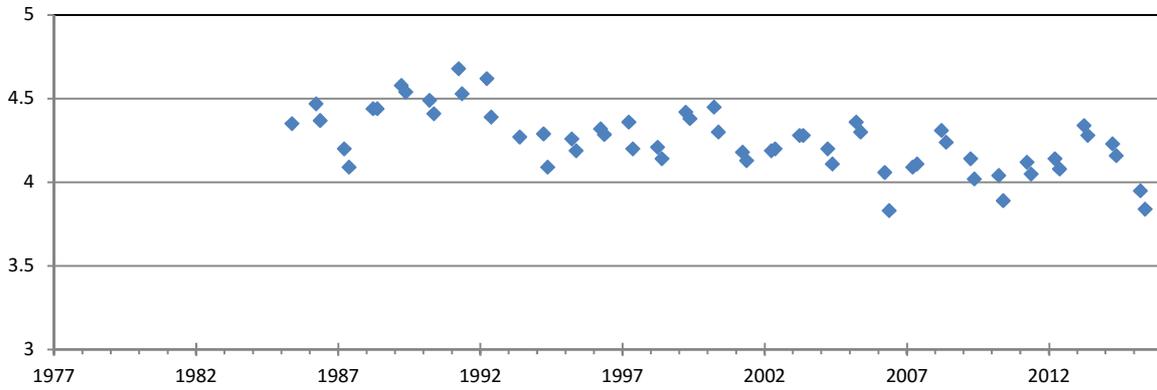
Clifton is a component of the 'Peel-Yalgorup System', which is listed as a Wetland of International Importance under the 'Ramsar' Convention on Wetlands.

Clifton is also a component of the 'Yalgorup Lakes System', which is listed in the 'Directory of Important Wetlands in Australia'.

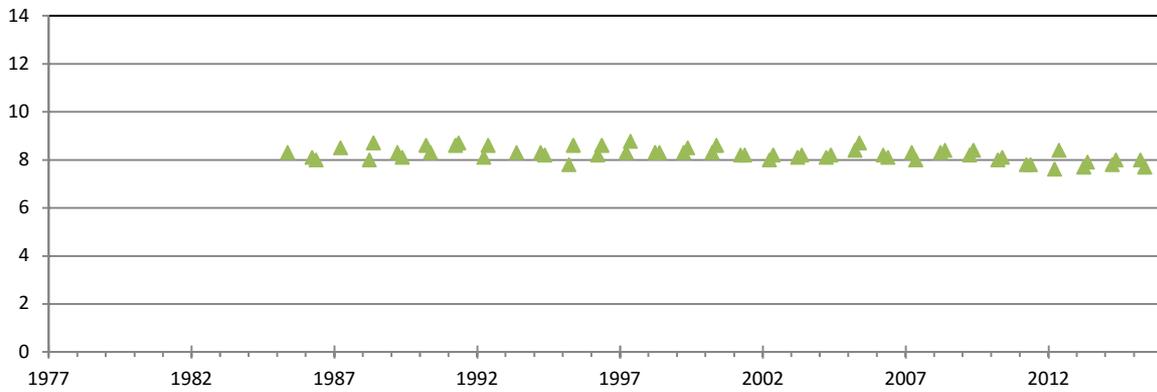
Clifton is in the Swan Coastal District (headquartered in Wanneroo) of the Swan DPaW Region.

## CLIFTON (with Depth axis 3-5m)

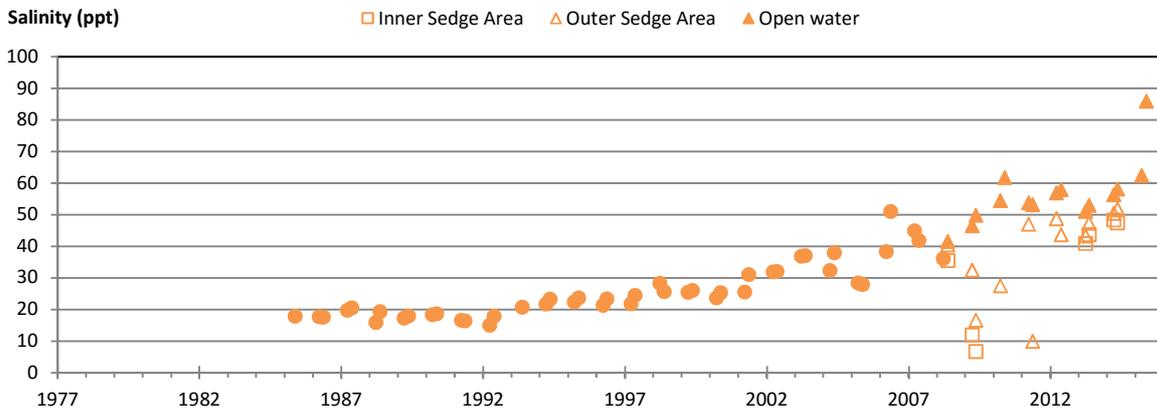
Depth (mLD)



pH



Salinity (ppt)



**Notes:**

1. Year labels are positioned at 1<sup>st</sup> July each year.
2. Data are from September and November routine monitoring periods only.

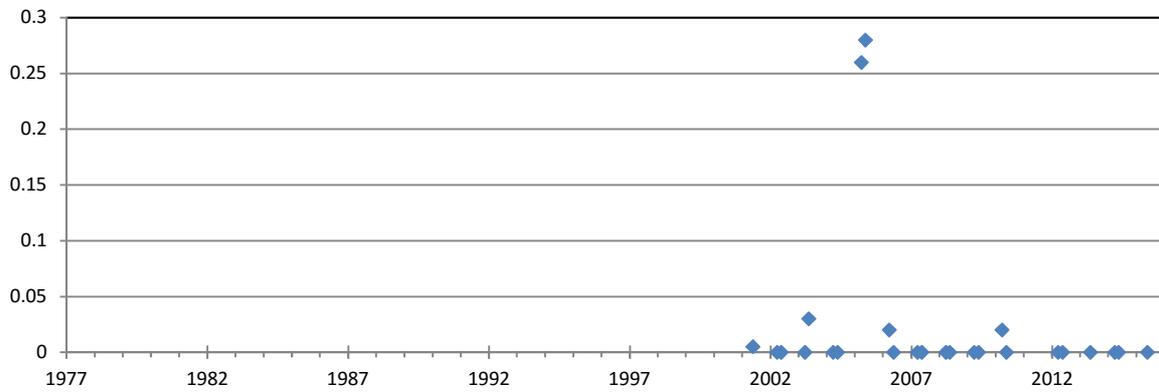
Clifton is a component of the 'Peel-Yalgorup System', which is listed as a Wetland of International Importance under the 'Ramsar' Convention on Wetlands.

Clifton is also a component of the 'Yalgorup Lakes System', which is listed in the 'Directory of Important Wetlands in Australia'.

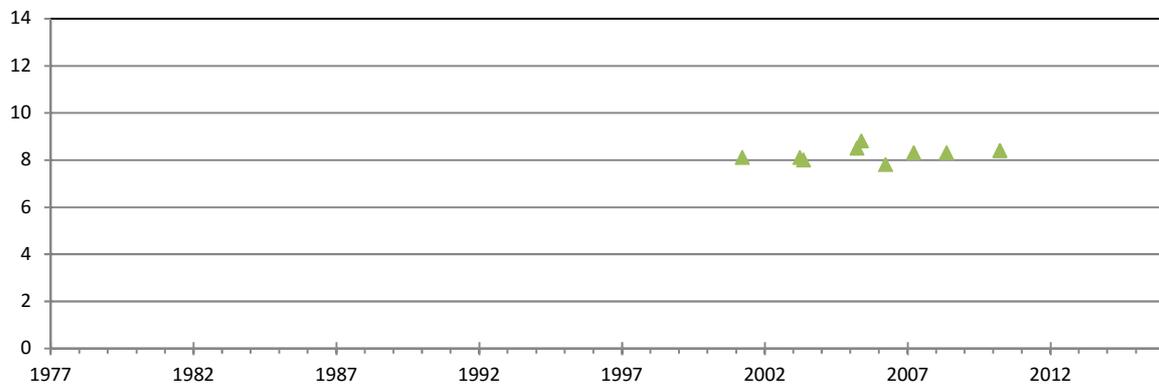
Clifton is in the Swan Coastal District (headquartered in Wanneroo) of the Swan DPaW Region.

## COLLETS ROAD

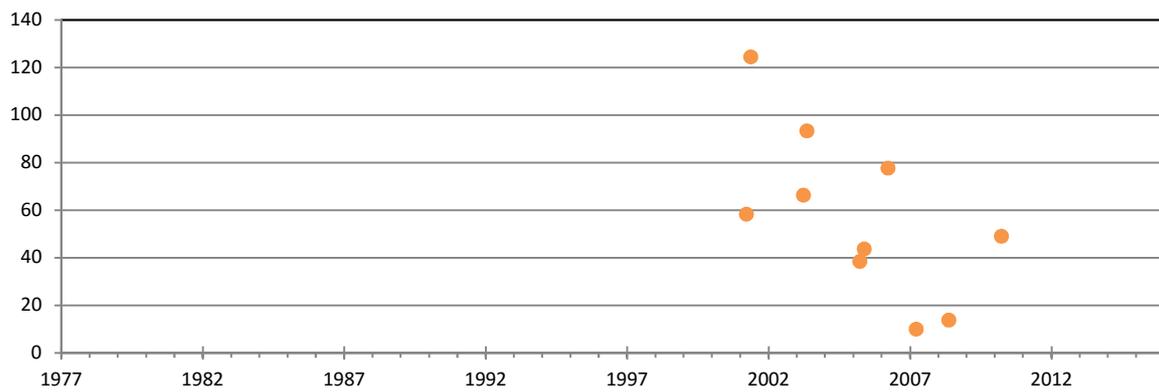
Depth (mLD)



pH



Salinity (ppt)



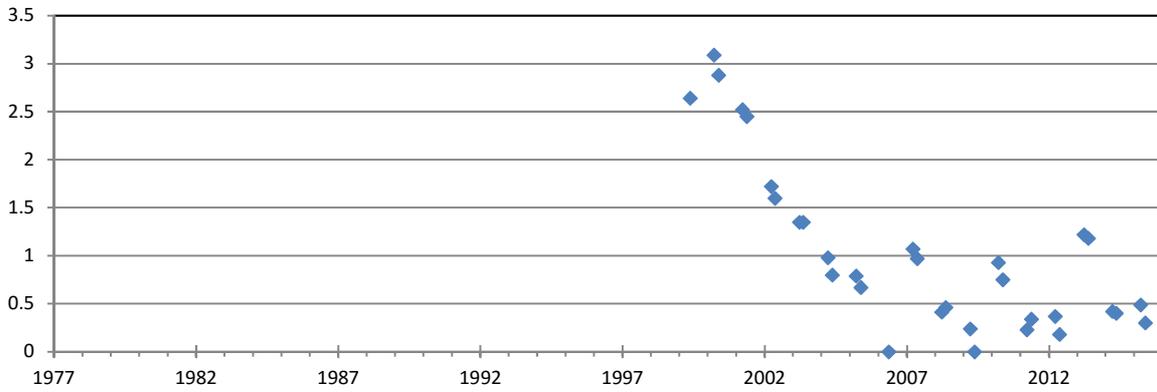
**Notes:**

1. Year labels are positioned at 1<sup>st</sup> July each year.
2. Data are from September and November routine monitoring periods only.

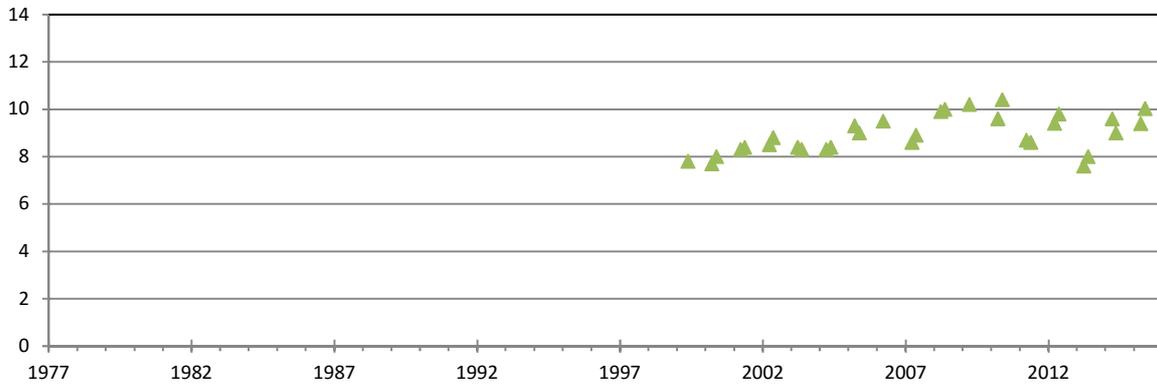
Collets Road Swamp is in the Albany District of the South Coast DPaW Region

## COOMALBIDGUP <sup>IM</sup>

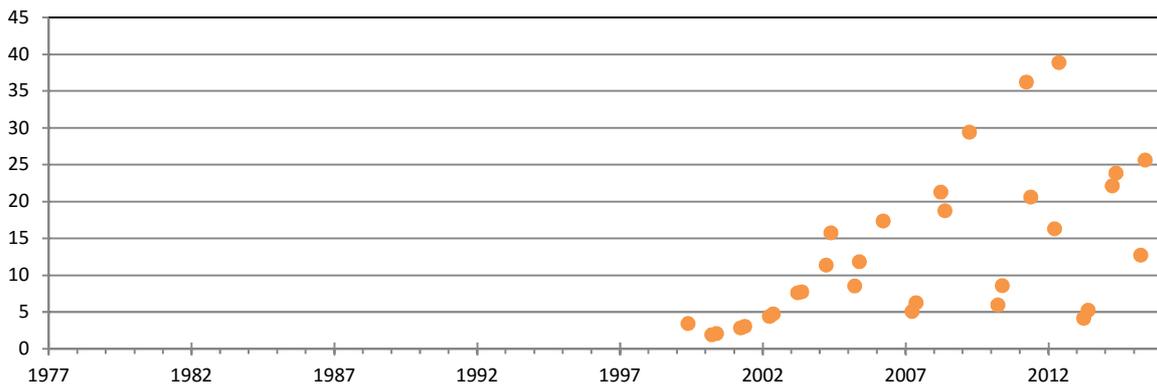
**Depth (mLD)**



**pH**



**Salinity (ppt)**



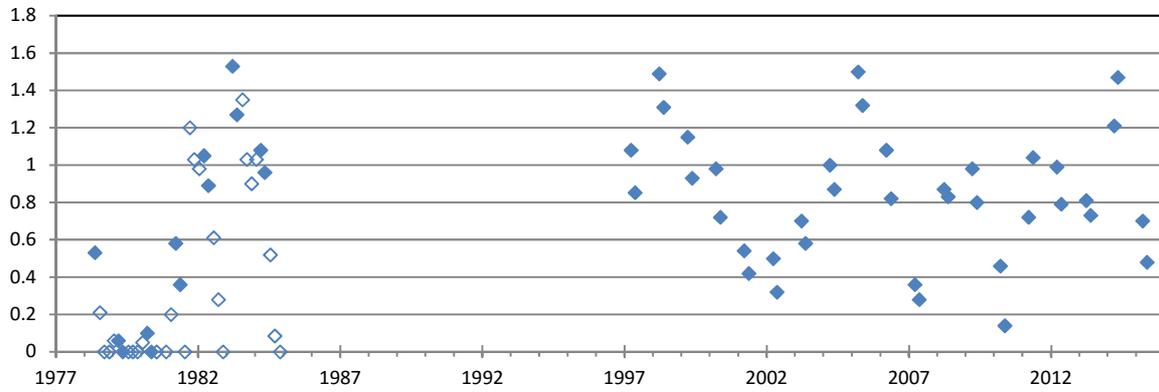
**Notes:**

1. <sup>IM</sup> indicates this is one of 25 wetlands Intensively Monitored for additional biological and physico-chemical attributes.
2. Year labels are positioned at 1<sup>st</sup> July each year.
3. Data are from September and November routine monitoring periods only.

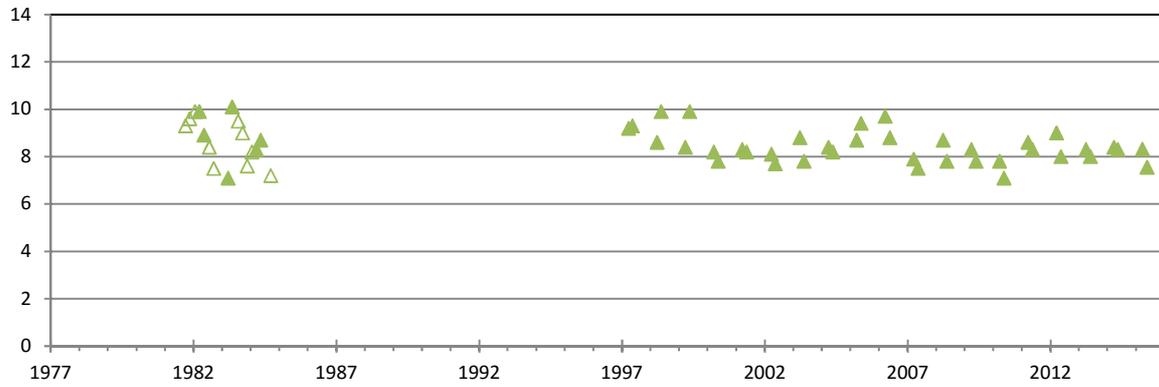
Coomalbidgup is in the Esperance District of the South Coast DPaW Region.

## COOMELBERRUP <sup>IM</sup>

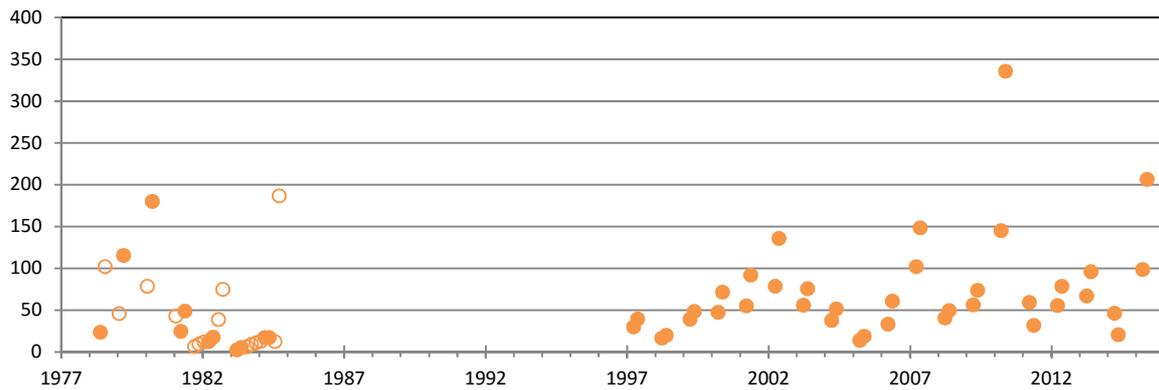
**Depth (mLD)**



**pH**



**Salinity (ppt)**



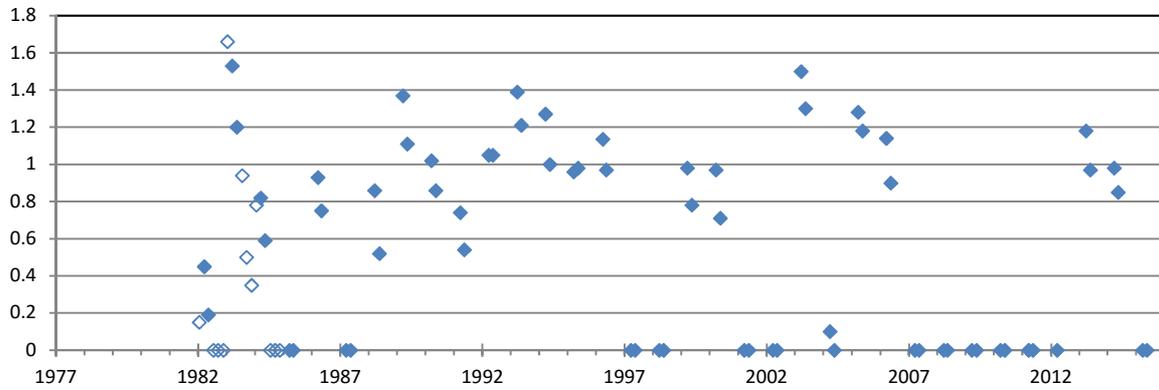
**Notes:**

1. <sup>IM</sup> indicates this is one of 25 wetlands Intensively Monitored for additional biological and physico-chemical attributes.
2. Year labels are positioned at 1<sup>st</sup> July each year.
3. Data are from Sept and Nov (filled symbols) and Jan, Mar, May & July (empty symbols) routine monitoring periods only.

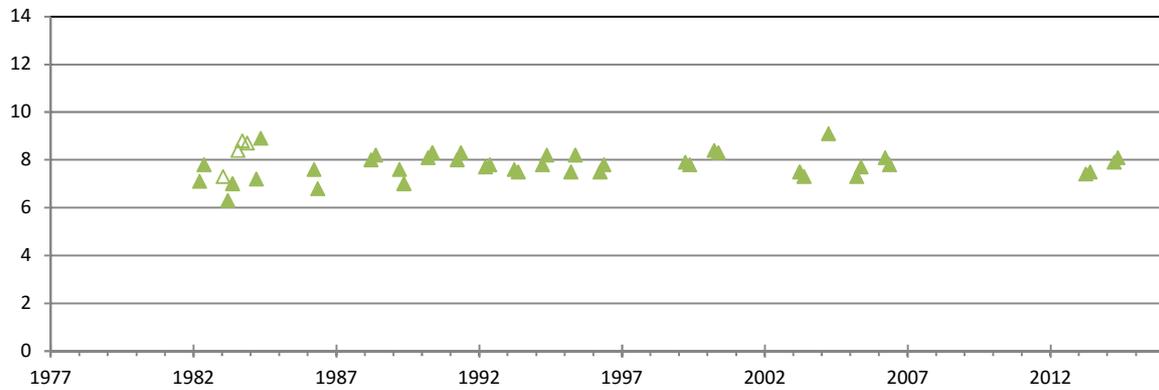
Coomelberrup is in the Southern Wheatbelt geographical area (headquartered in Narrogin) of the Wheatbelt DPaW Region.

## CORRIGIN 12900 <sup>IM</sup>

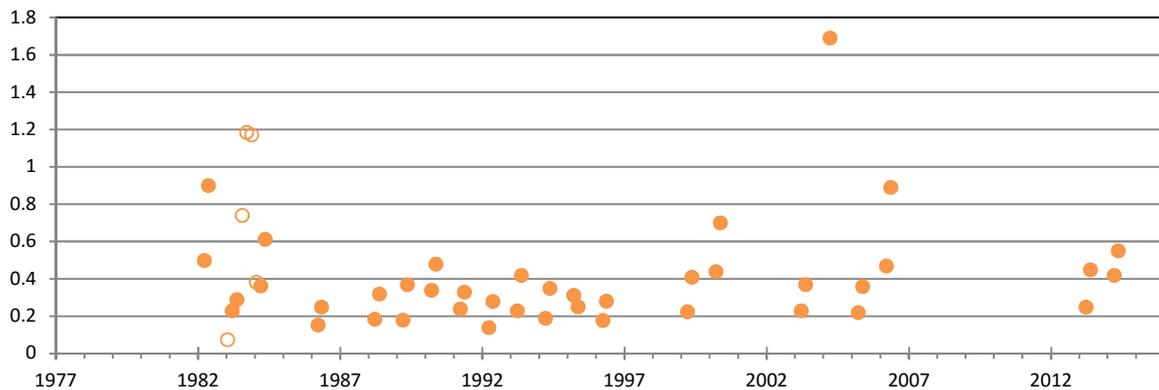
**Depth (mLD)**



**pH**



**Salinity (ppt)**



**Notes:**

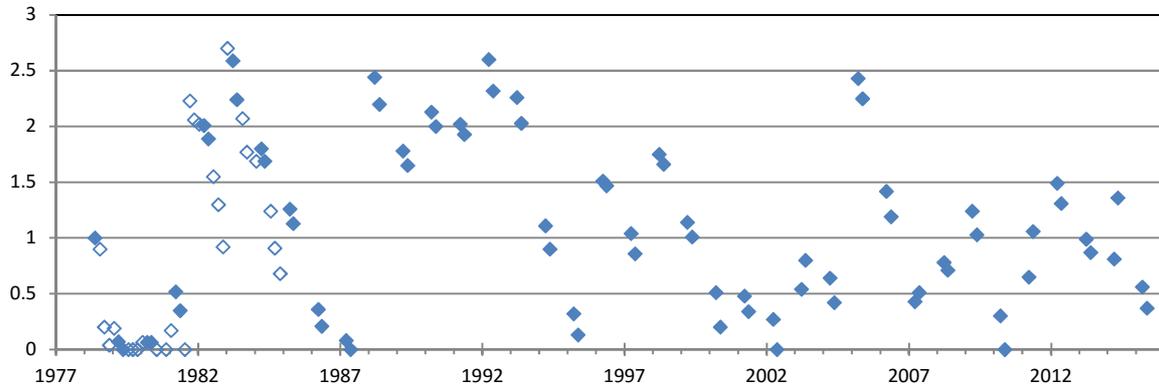
1. <sup>IM</sup> indicates this is one of 25 wetlands Intensively Monitored for additional biological and physico-chemical attributes.
2. Year labels are positioned at 1<sup>st</sup> July each year.
3. Data are from Sept and Nov (filled symbols) and Jan, Mar, May & July (empty symbols) routine monitoring periods only.

Corrigin 12900 (also known as Paperbark Swamp) has been nominated for listing in the 'Directory of Important Wetlands in Australia' (Elscoth *et al.* 2009).

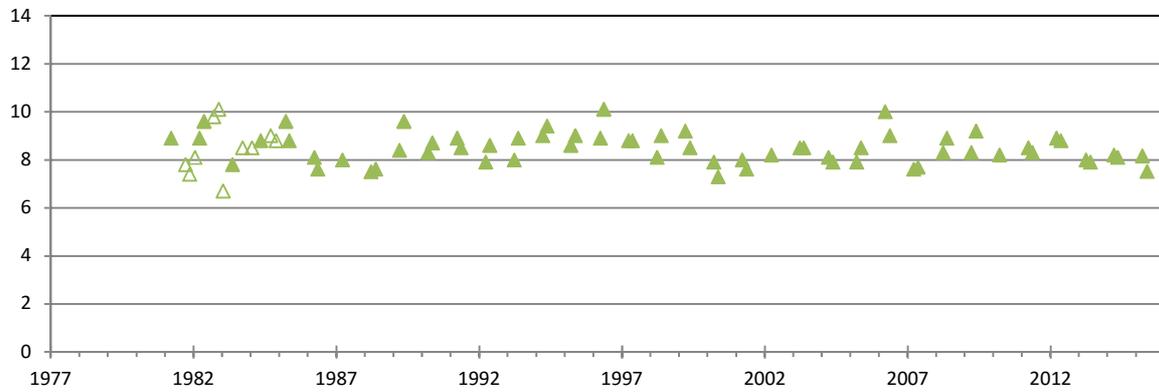
Corrigin 12900 is in the Southern Wheatbelt geographical area (headquartered in Narrogin) of the Wheatbelt DPaW Region.

## COYRECUP<sup>IM</sup>

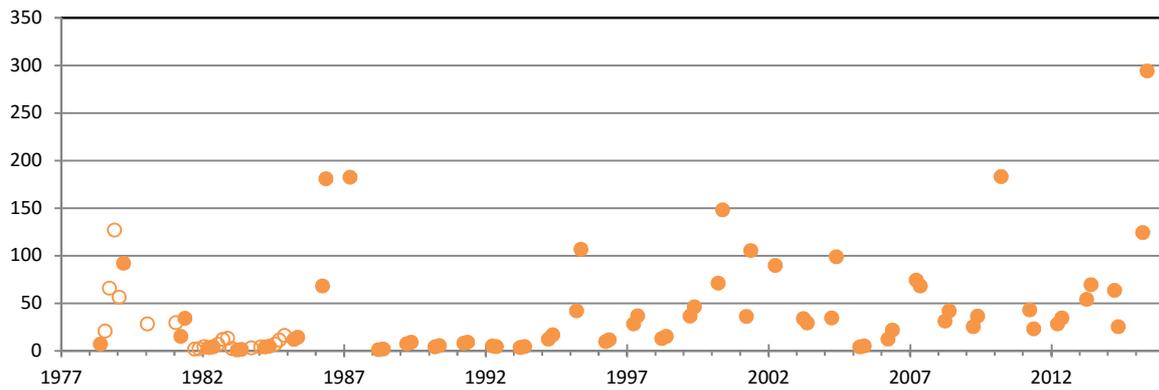
**Depth (mLD)**



**pH**



**Salinity (ppt)**



**Notes:**

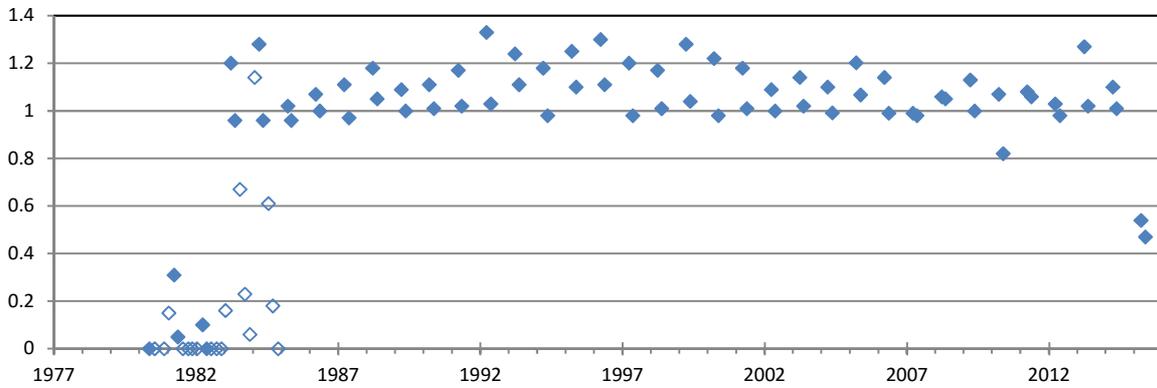
1. <sup>IM</sup> indicates this is one of 25 wetlands Intensively Monitored for additional biological and physico-chemical attributes.
2. Year labels are positioned at 1<sup>st</sup> July each year.
3. Data are from Sept and Nov (filled symbols) and Jan, Mar, May & July (empty symbols) routine monitoring periods only.

Coyrecup Lake is listed in the 'Directory of Important Wetlands in Australia'.

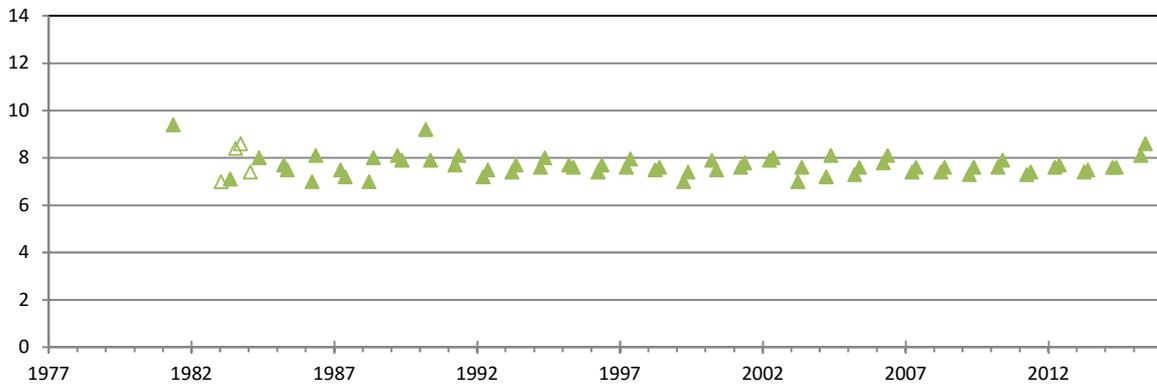
Coyrecup is in the Southern Wheatbelt geographical area (headquartered in Narrogin) of the Wheatbelt DPaw Region.

# CRACKERS

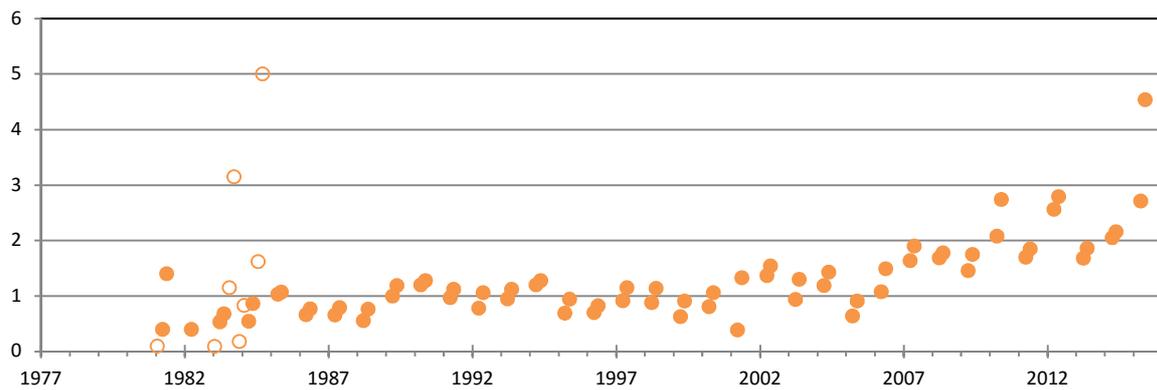
Depth (mLD)



pH



Salinity (ppt)



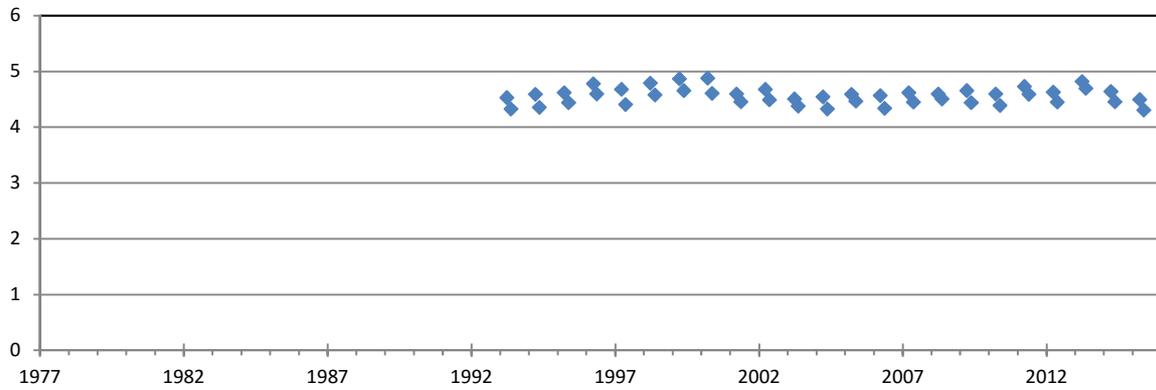
**Notes:**

1. Year labels are positioned at 1<sup>st</sup> July each year.
2. Data are from Sept and Nov (filled symbols) and Jan, Mar, May & July (empty symbols) routine monitoring periods only.

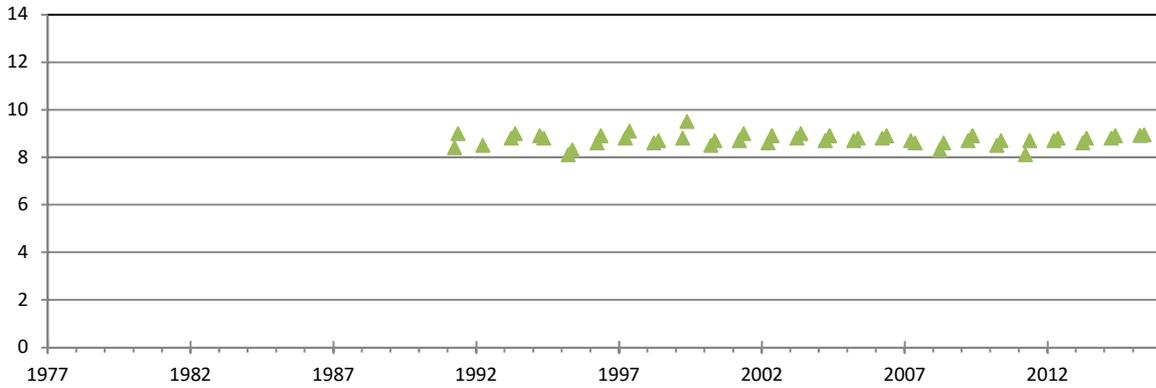
Crackers is in the Moora District (headquartered in Jurien Bay) of the Midwest DPaw Region.

## DAVIES (with Depth axis 0-6m)

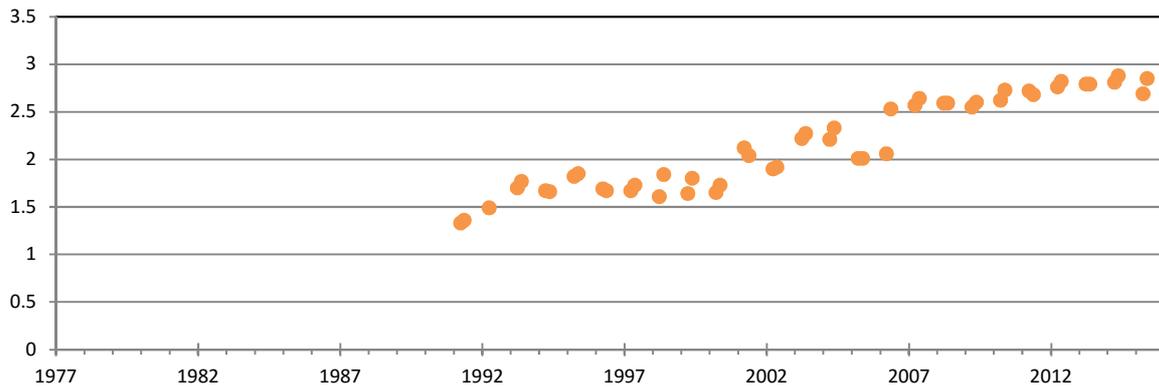
Depth (mLD)



pH



Salinity (ppt)

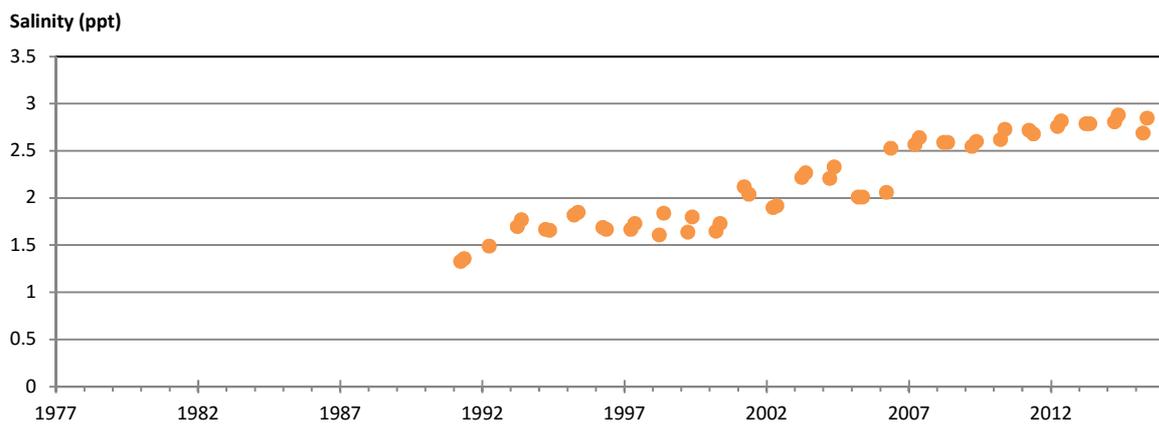
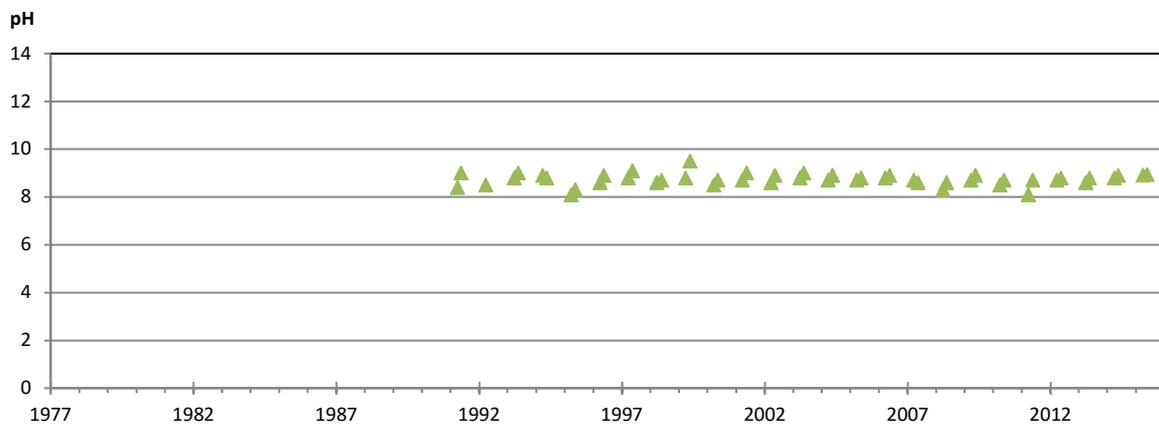
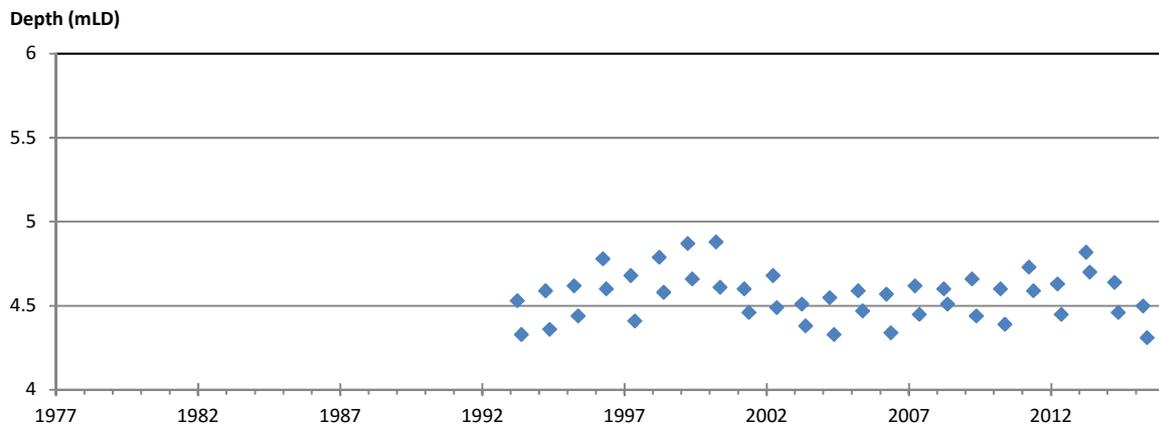


### Notes:

1. Year labels are positioned at 1<sup>st</sup> July each year.
2. Data are from September and November routine monitoring periods only.

Davies is in the Blackwood District (headquartered in Busselton) of the South West DPaW Region.

## DAVIES (with Depth axis 4-6m)



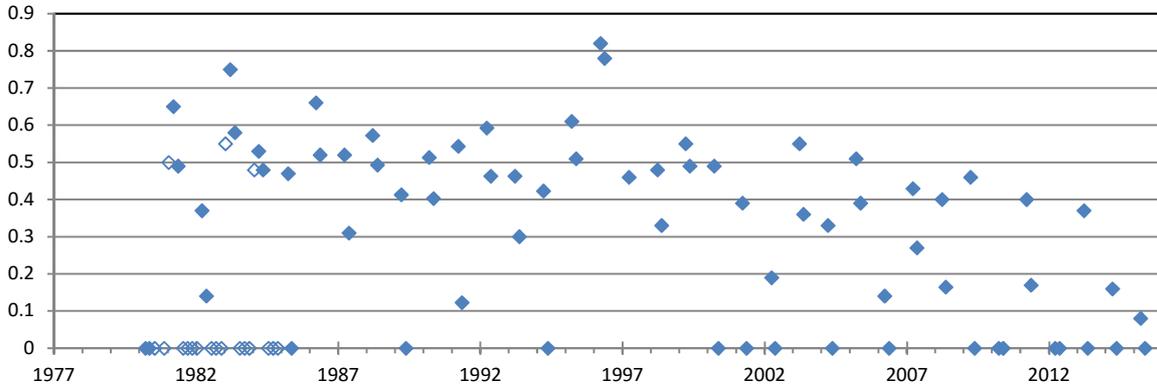
**Notes:**

1. Year labels are positioned at 1<sup>st</sup> July each year.
2. Data are from September and November routine monitoring periods only.

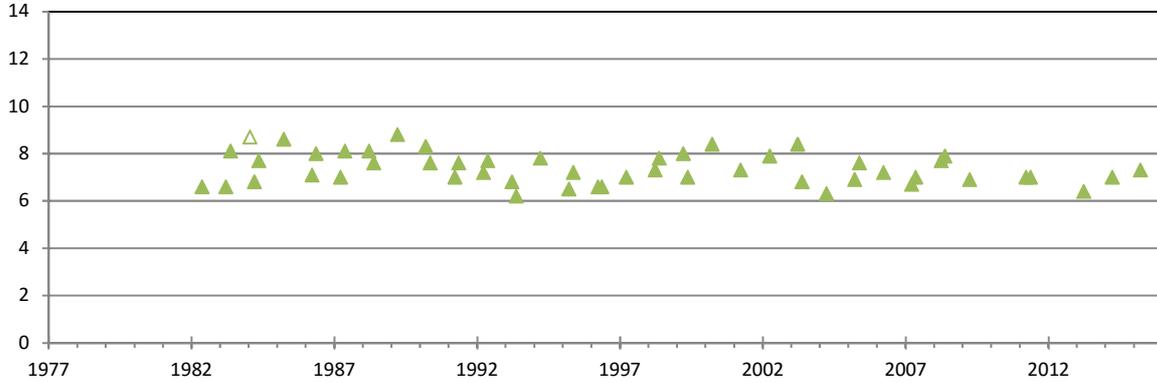
Davies is in the Blackwood District (headquartered in Busselton) of the South West DPaW Region.

## DOBADERRY

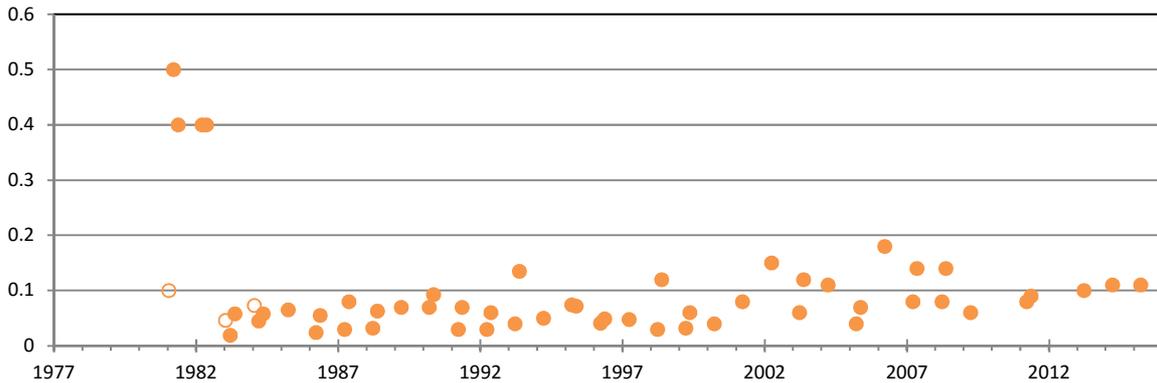
**Depth (mLD)**



**pH**



**Salinity (ppt)**



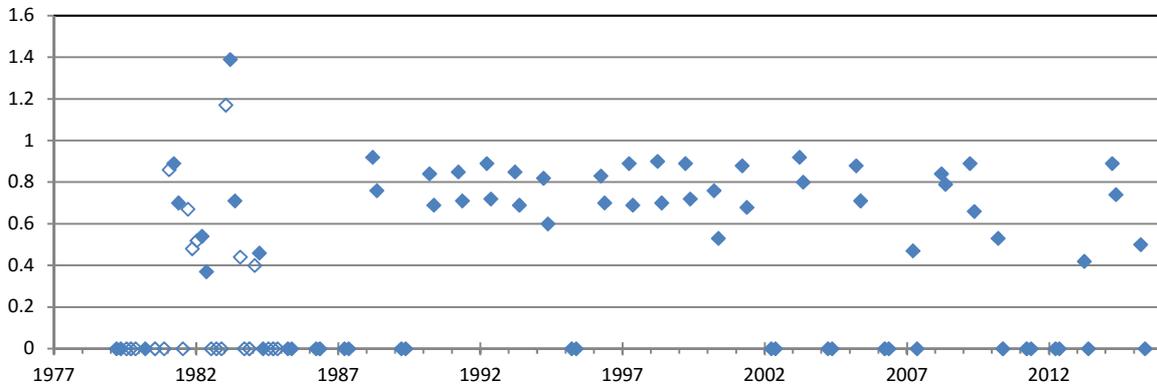
**Notes:**

1. Year labels are positioned at 1<sup>st</sup> July each year.
2. Data are from Sept and Nov (filled symbols) and Jan, Mar, May & July (empty symbols) routine monitoring periods only.

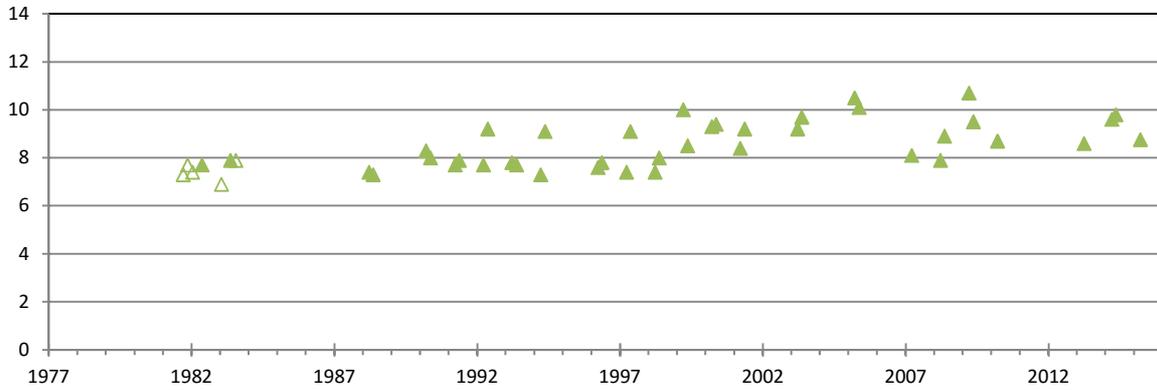
Dobaderry is in the Perth Hills District (headquartered in Mundaring) of the Swan DPaW Region.

## DULBINNING

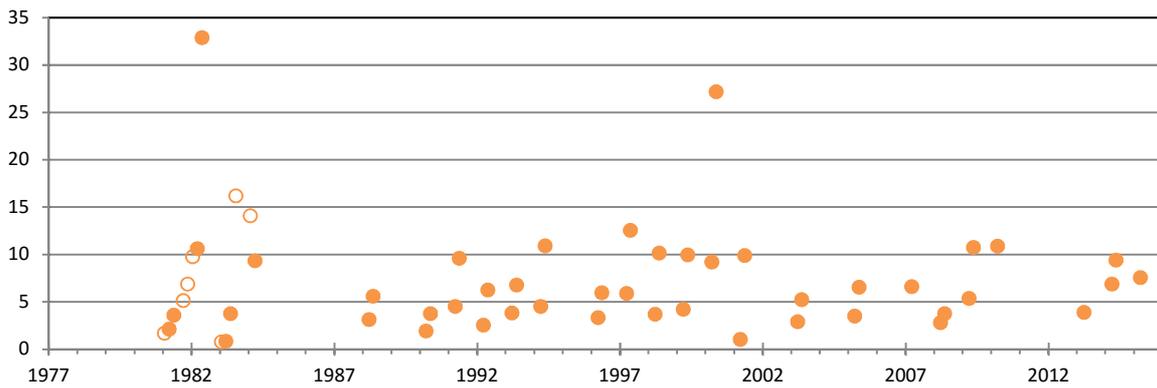
**Depth (mLD)**



**pH**



**Salinity (ppt)**



**Notes:**

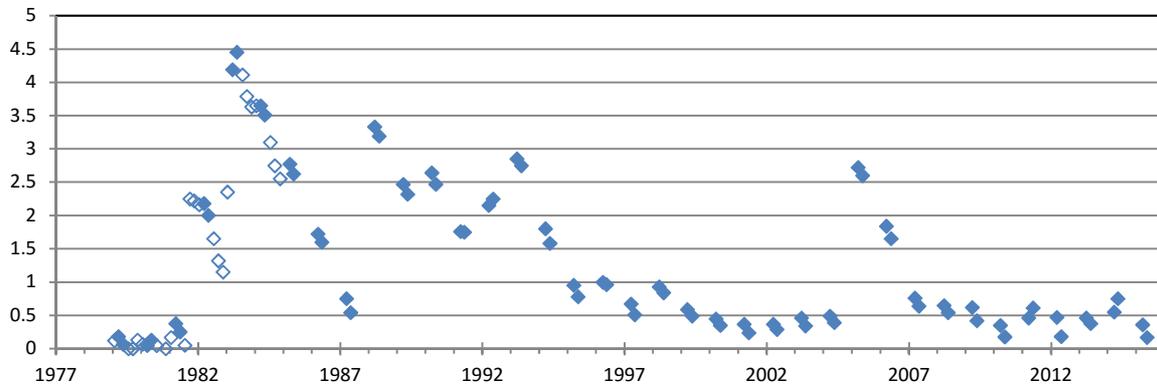
1. Year labels are positioned at 1<sup>st</sup> July each year.
2. Data are from Sept and Nov (filled symbols) and Jan, Mar, May & July (empty symbols) routine monitoring periods only.

Dulbinning is within the Toolibin Lake Natural Diversity Recovery Catchment.

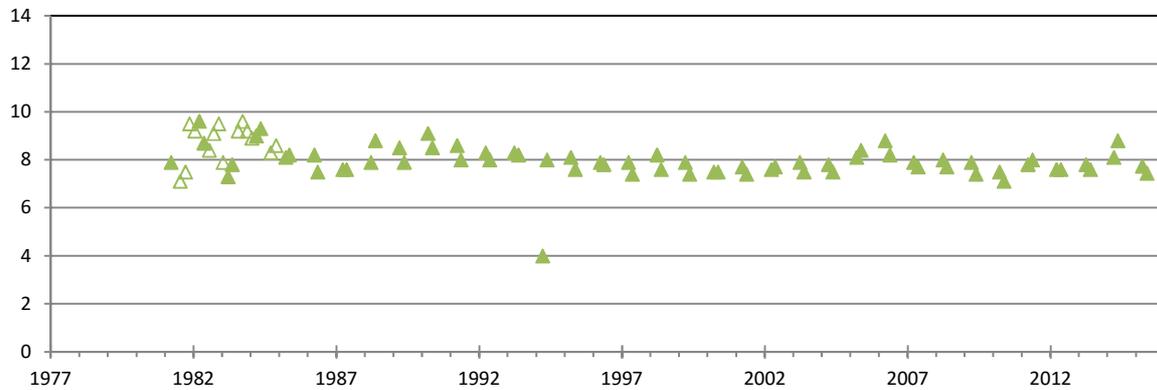
Dulbinning is in the Southern Wheatbelt geographical area (headquartered in Narrogin) of the Wheatbelt DPaW Region.

## DUMBLEYUNG <sup>IM</sup>

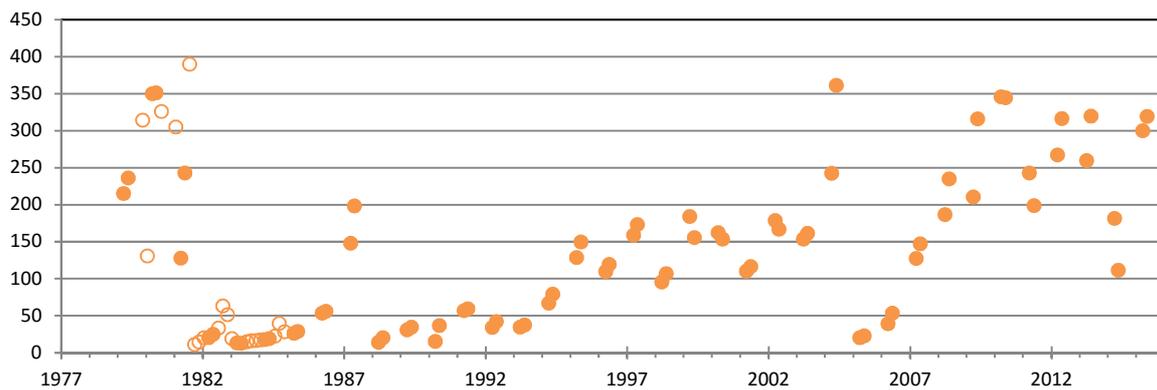
Depth (mLD)



pH



Salinity (ppt)



**Notes:**

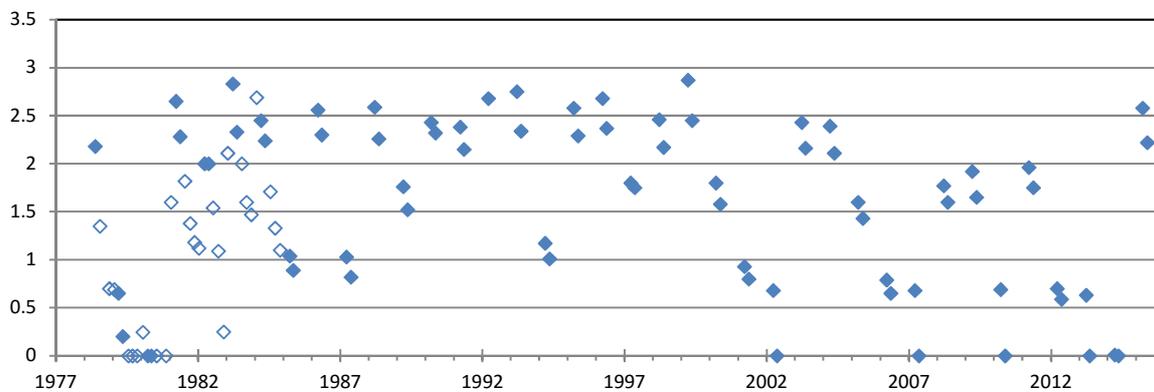
1. <sup>IM</sup> indicates this is one of 25 wetlands Intensively Monitored for additional biological and physico-chemical attributes.
2. Year labels are positioned at 1<sup>st</sup> July each year.
3. Data are from Sept and Nov (filled symbols) and Jan, Mar, May & July (empty symbols) routine monitoring periods only.

Dumbleyung Lake is listed in the 'Directory of Important Wetlands in Australia'.

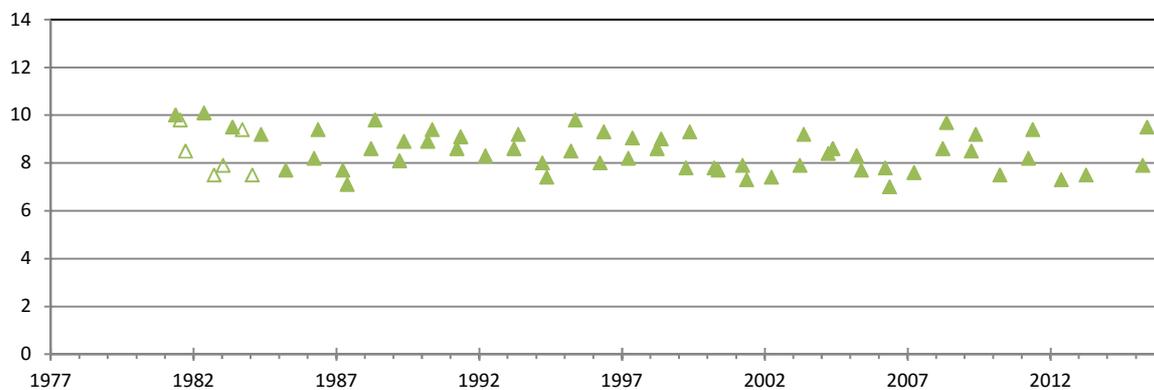
Dumbleyung is in the Southern Wheatbelt geographical area (headquartered in Narrogin) of the Wheatbelt DPaW Region.

## EGANU <sup>IM</sup>

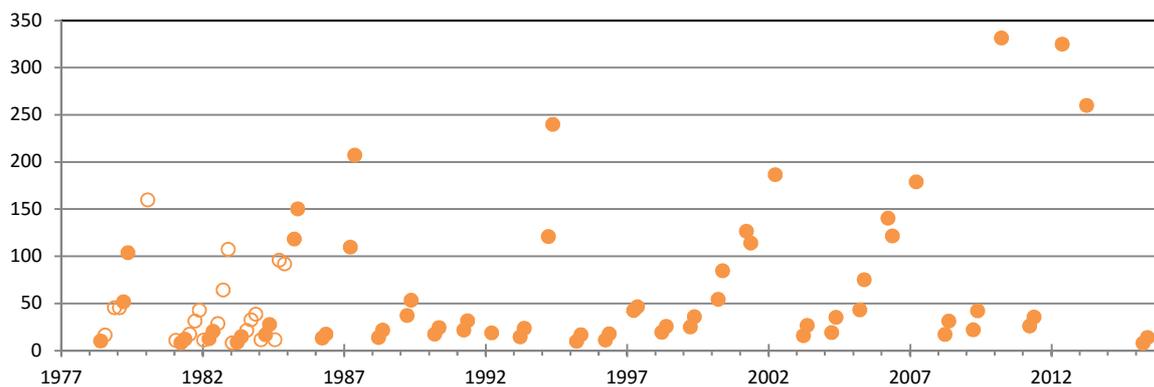
**Depth (mLD)**



**pH**



**Salinity (ppt)**



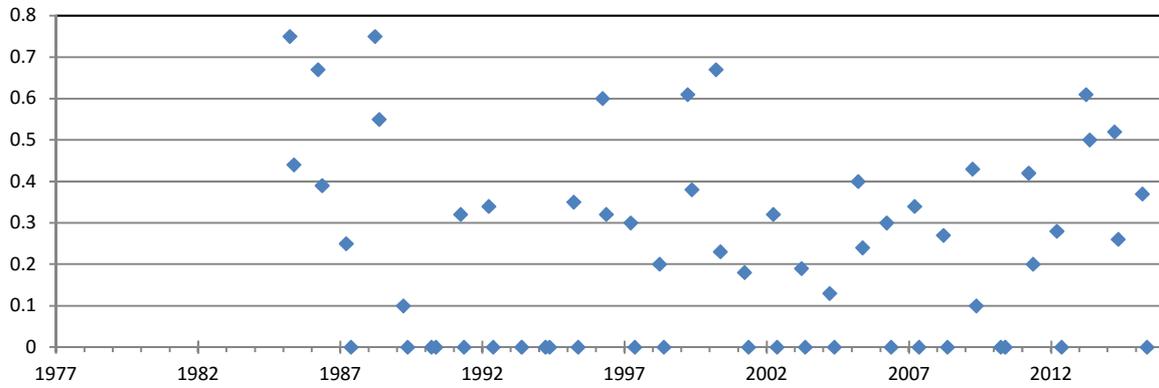
**Notes:**

1. <sup>IM</sup> indicates this is one of 25 wetlands Intensively Monitored for additional biological and physico-chemical attributes.
2. Year labels are positioned at 1<sup>st</sup> July each year.
3. Data are from Sept and Nov (filled symbols) and Jan, Mar, May & July (empty symbols) routine monitoring periods only.

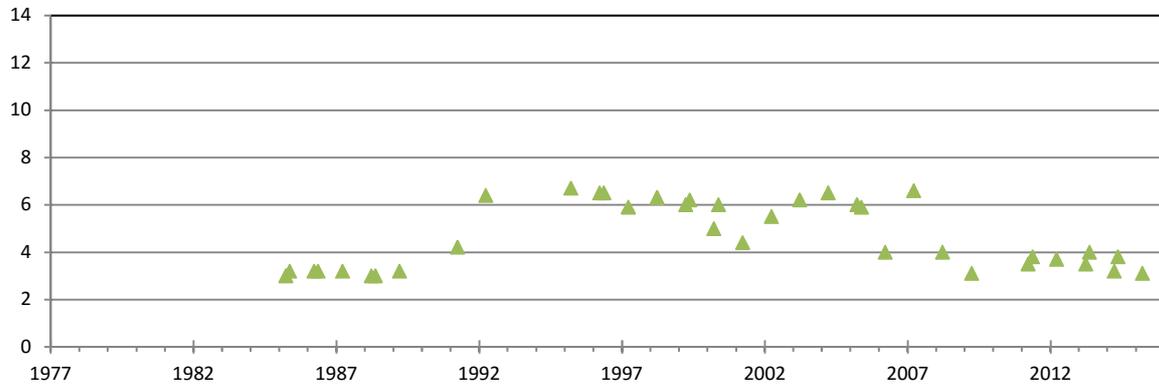
Eganu is in the Moora District (headquartered in Jurien Bay) of the Midwest DPaW Region.

# EGRET

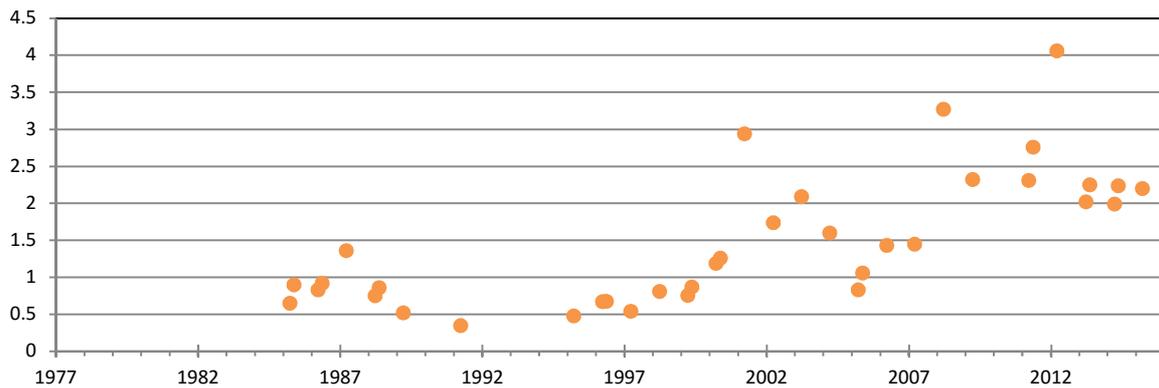
Depth (mLD)



pH



Salinity (ppt)



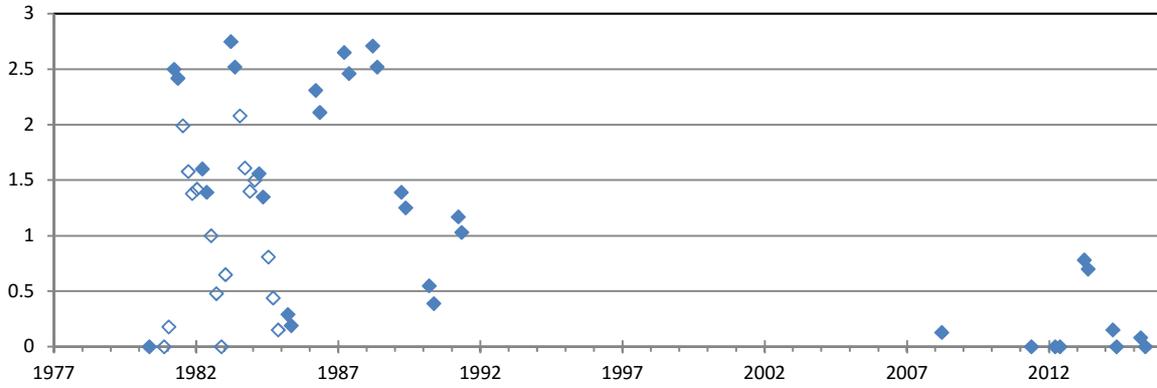
**Notes:**

1. Year labels are positioned at 1<sup>st</sup> July each year.
2. Data are from September and November routine monitoring periods only.

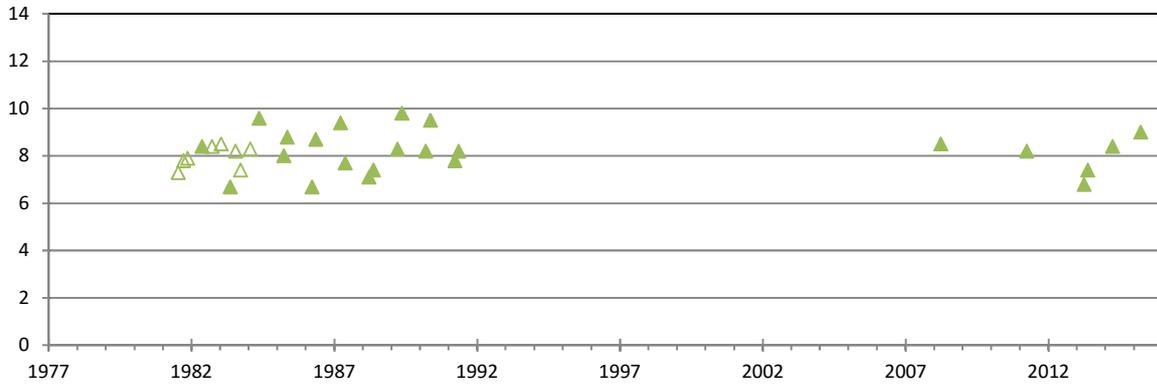
Egret is in the Wellington District (headquartered in Collie) of the South West DPaW Region.

# ENEMINGA

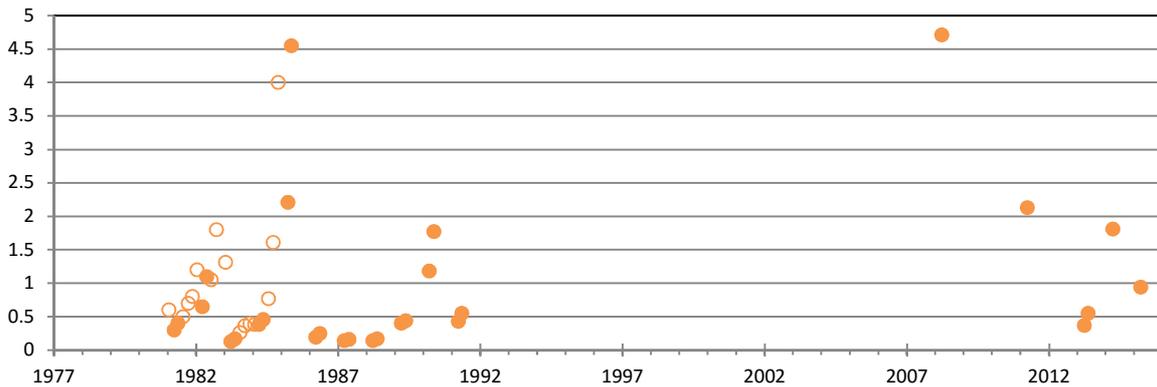
Depth (mLD)



pH



Salinity (ppt)



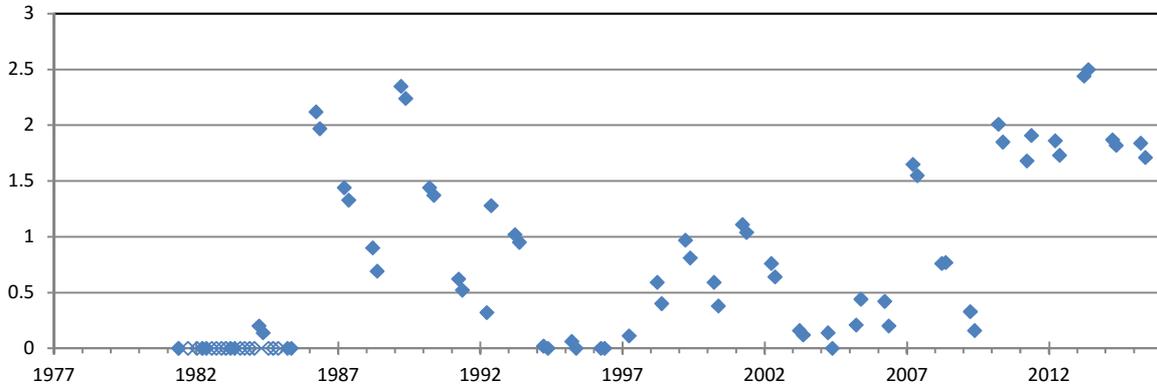
**Notes:**

1. Year labels are positioned at 1<sup>st</sup> July each year.
2. Data are from Sept and Nov (filled symbols) and Jan, Mar, May & July (empty symbols) routine monitoring periods only.

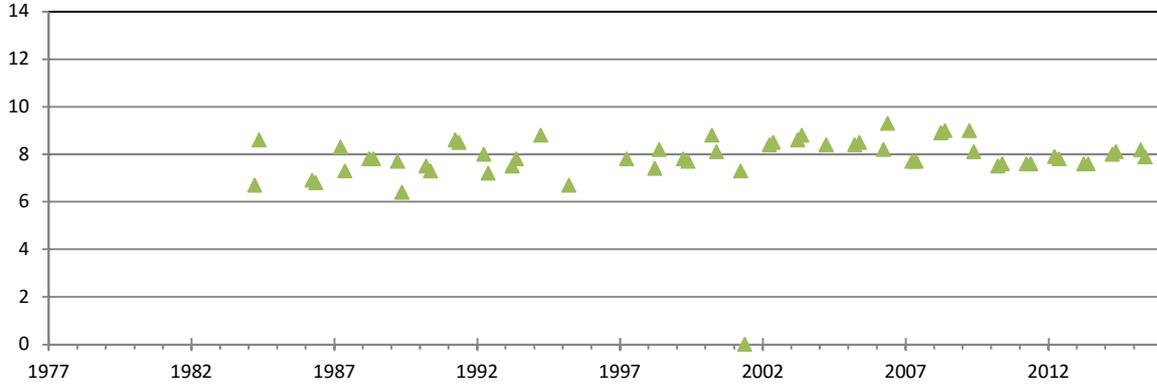
Eneminga is in the Moora District (headquartered in Jurien Bay) of the Midwest DPaW Region.

## ESPERANCE 26410

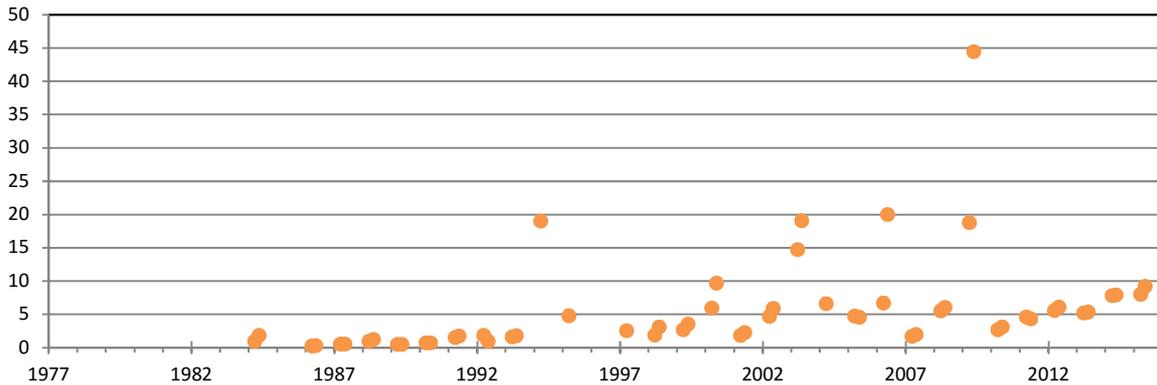
**Depth (mLD)**



**pH**



**Salinity (ppt)**



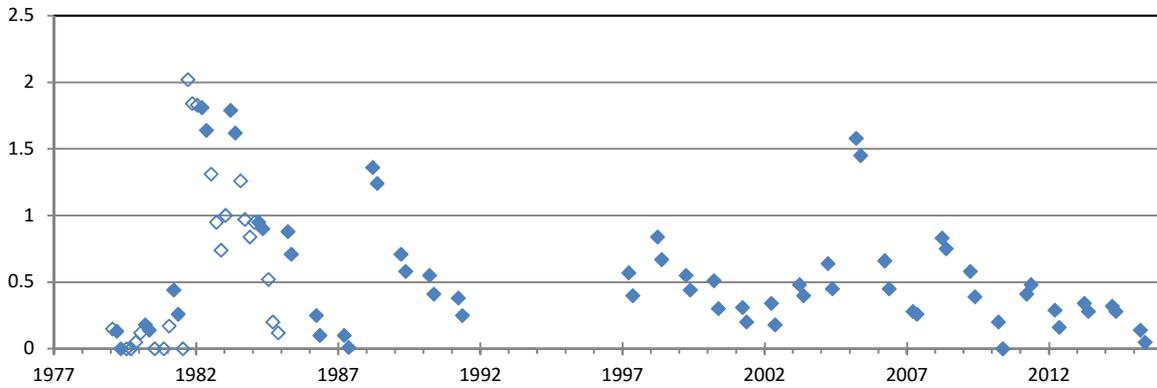
**Notes:**

1. Year labels are positioned at 1<sup>st</sup> July each year.
2. Data are from Sept and Nov (filled symbols) and Jan, Mar, May & July (empty symbols) routine monitoring periods only.

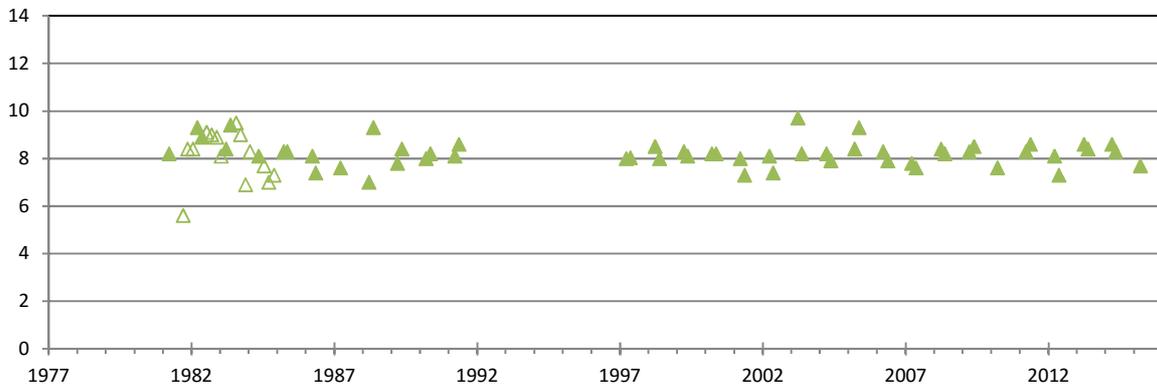
Esperance 26410 is in the Esperance District of the South Coast DPaW Region.

# FLAGSTAFF

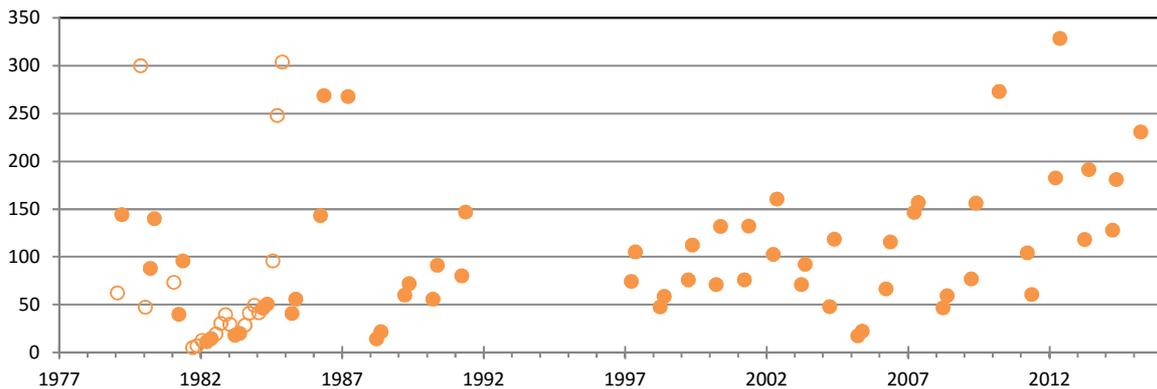
Depth (mLD)



pH



Salinity (ppt)



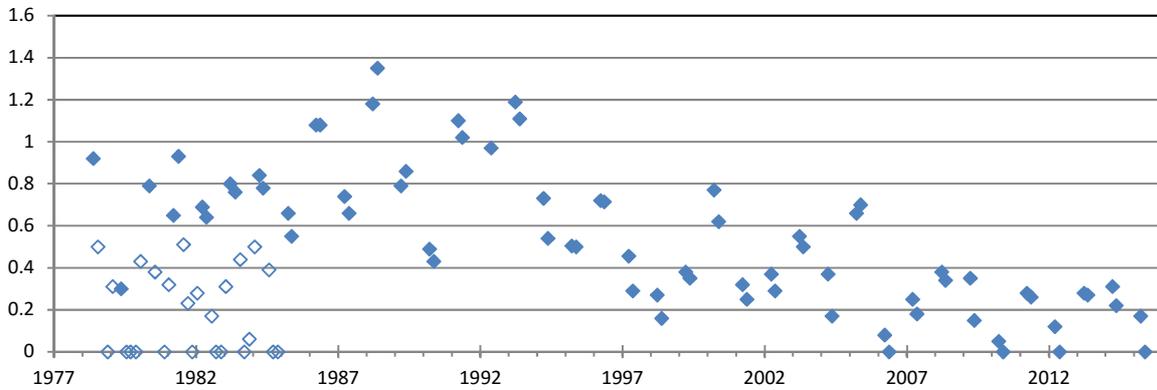
**Notes:**

1. Year labels are positioned at 1<sup>st</sup> July each year.
2. Data are from Sept and Nov (filled symbols) and Jan, Mar, May & July (empty symbols) routine monitoring periods only.

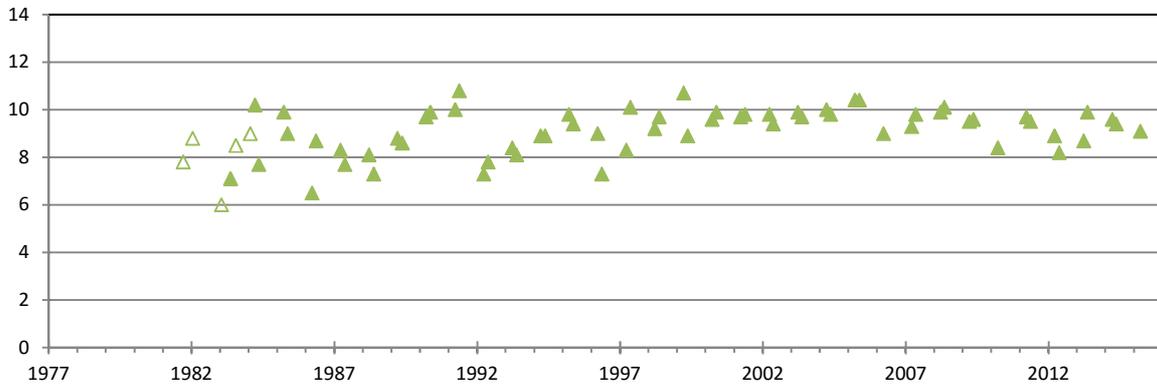
Flagstaff is in the Southern Wheatbelt geographical area (headquartered in Narrogin) of the Wheatbelt DPaW Region.

## FORRESTDALE

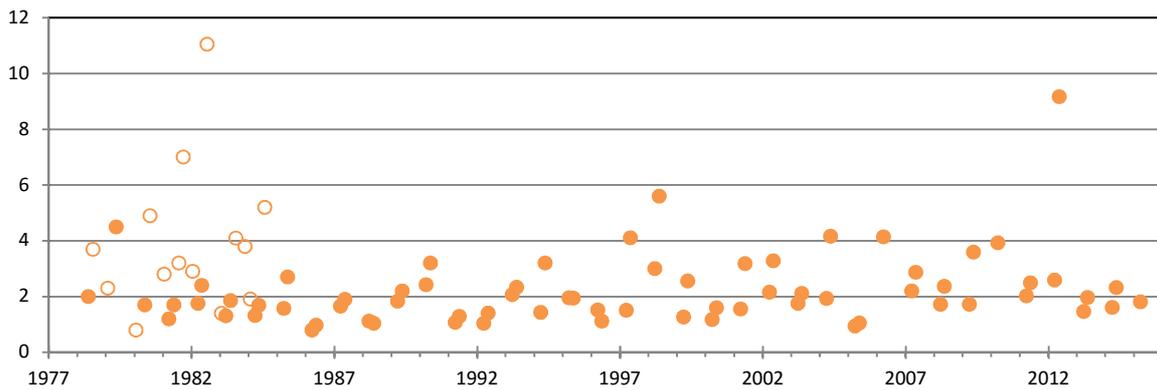
**Depth (mLD)**



**pH**



**Salinity (ppt)**



**Notes:**

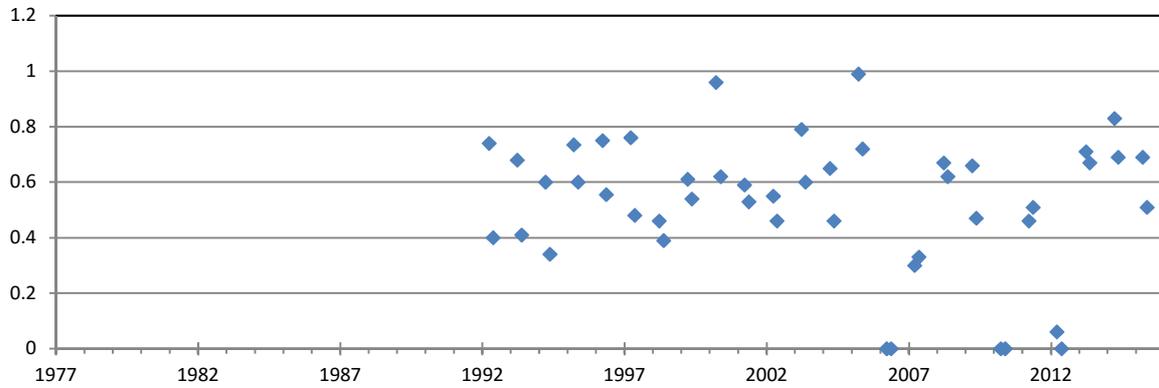
1. Year labels are positioned at 1<sup>st</sup> July each year.
2. Data are from Sept and Nov (filled symbols) and Jan, Mar, May & July (empty symbols) routine monitoring periods only.

Forrestdale Lake is a component of the 'Forrestdale and Thomsons Lakes' system, which is listed as a Wetland of International Importance under the 'Ramsar' Convention on Wetlands, and is also listed in the 'Directory of Important Wetlands in Australia'.

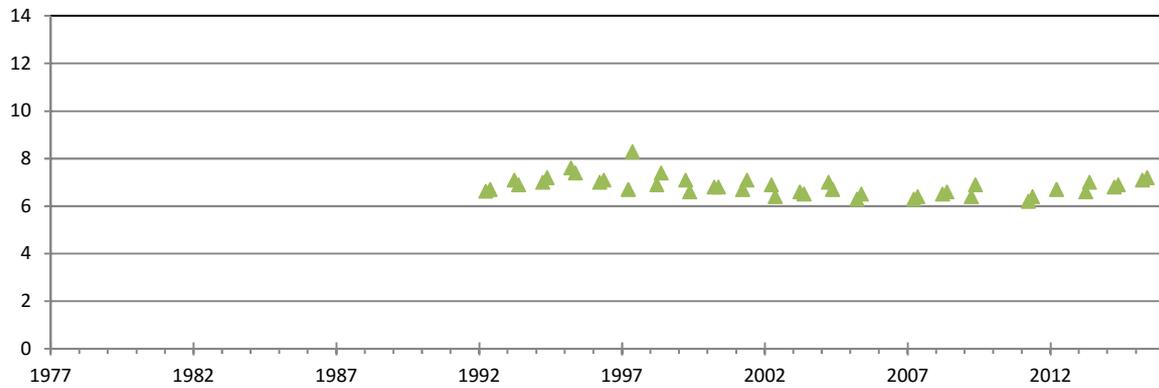
Forrestdale is in the Swan Coastal District (headquartered in Wanneroo) of the Swan DPaW Region.

## GIBBS

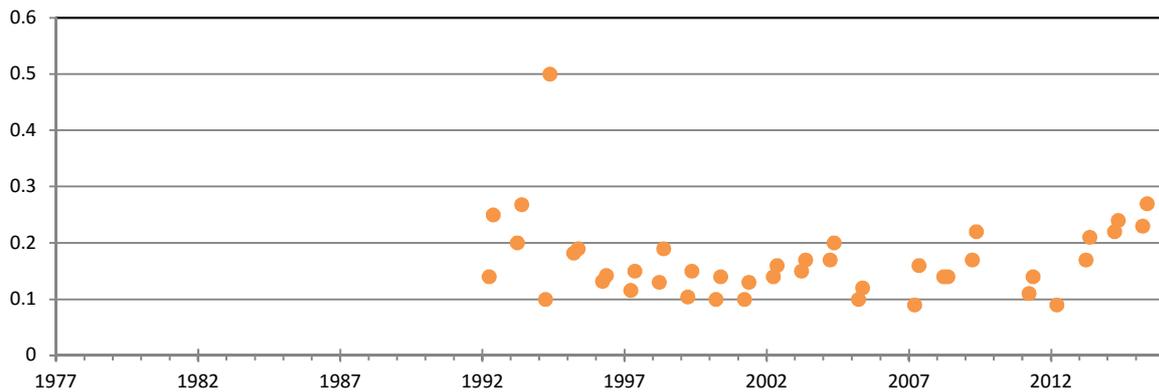
Depth (mLD)



pH



Salinity (ppt)



**Notes:**

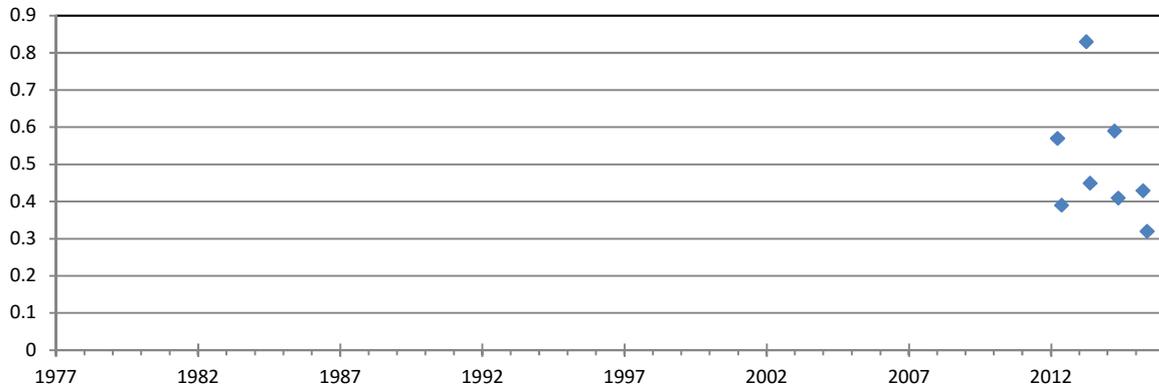
1. Year labels are positioned at 1<sup>st</sup> July each year.
2. Data are from September and November routine monitoring periods only.

Gibbs is a component of the 'Gibbs Road Swamp System', which is listed in the 'Directory of Important Wetlands in Australia'.

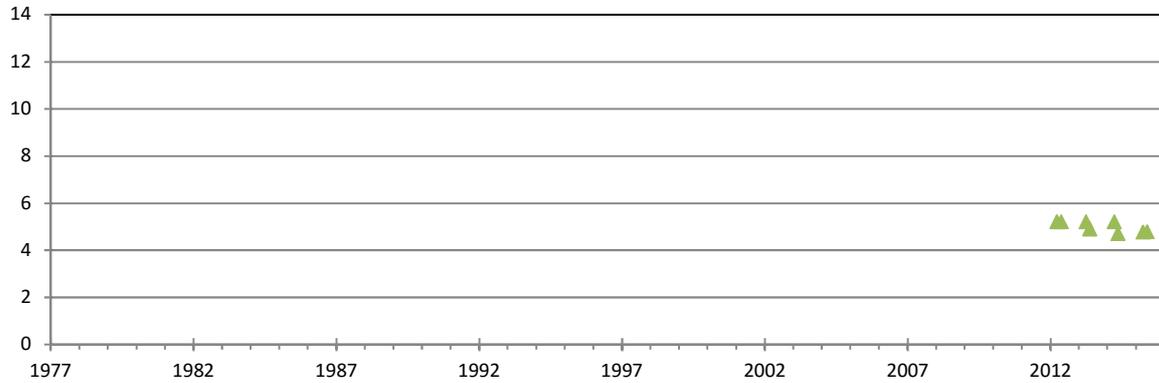
Gibbs is in the Swan Coastal District (headquartered in Wanneroo) of the Swan DPaW Region.

# GINGILUP

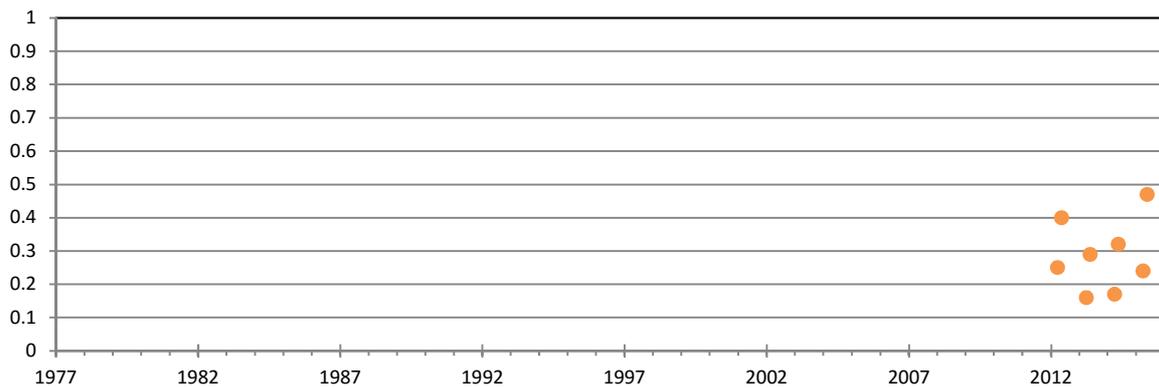
**Depth (mLD)**



**pH**



**Salinity (ppt)**



**Notes:**

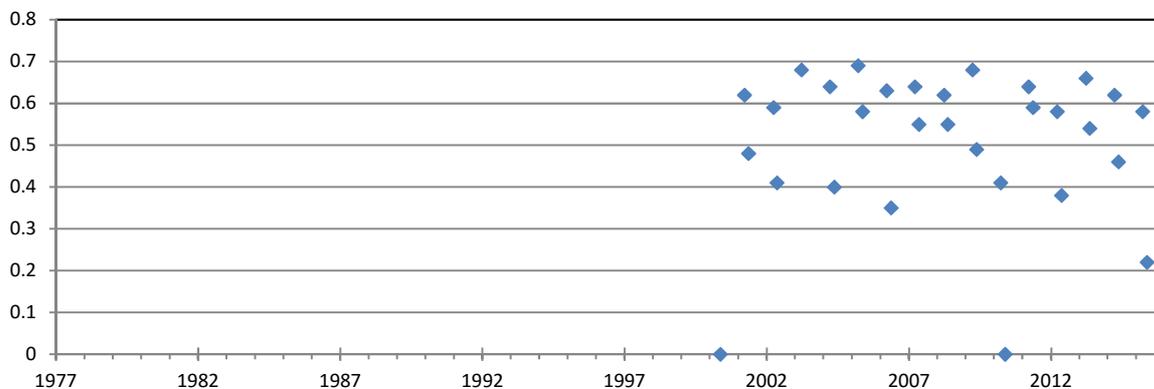
1. Year labels are positioned at 1<sup>st</sup> July each year.
2. Data are from September and November routine monitoring periods only.

Gingilup is a component of the 'Gingilup-Jasper Wetland System', which is listed in the 'Directory of Important Wetlands in Australia'.

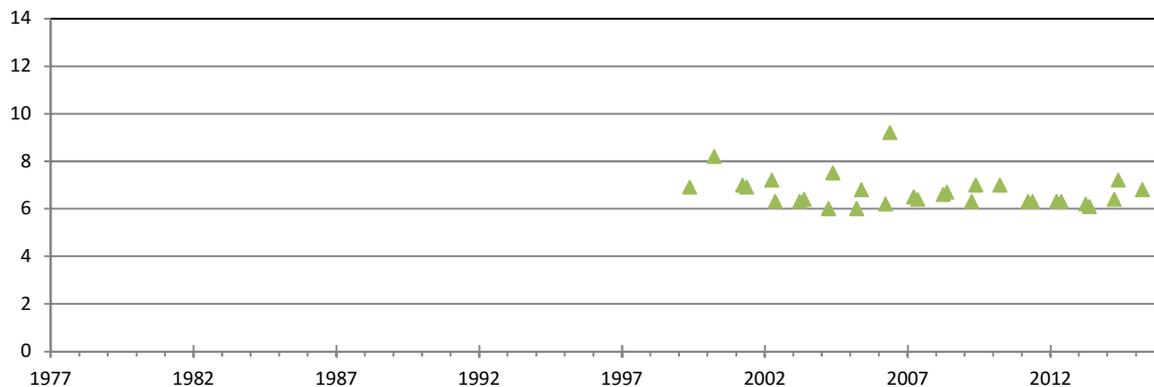
Gingilup is in the Blackwood District (headquartered in Busselton) of the South West DPaW Region.

## GOONAPING <sup>IM</sup>

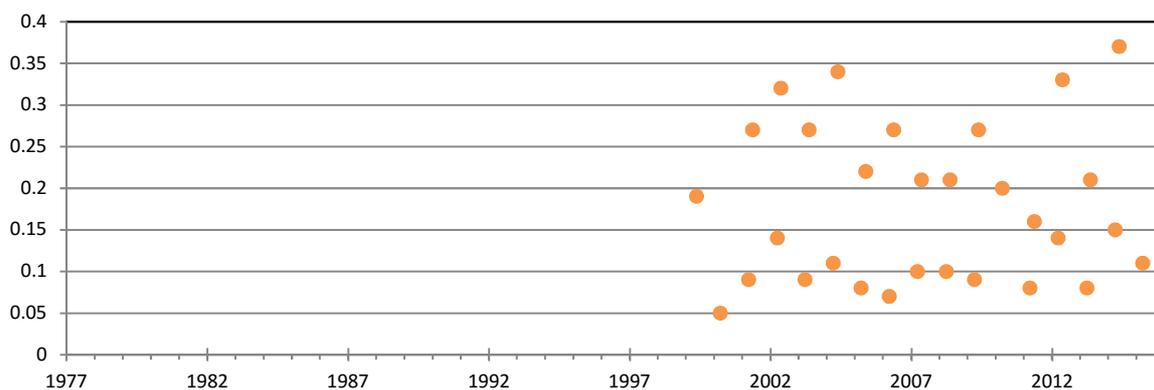
**Depth (mLD)**



**pH**



**Salinity (ppt)**



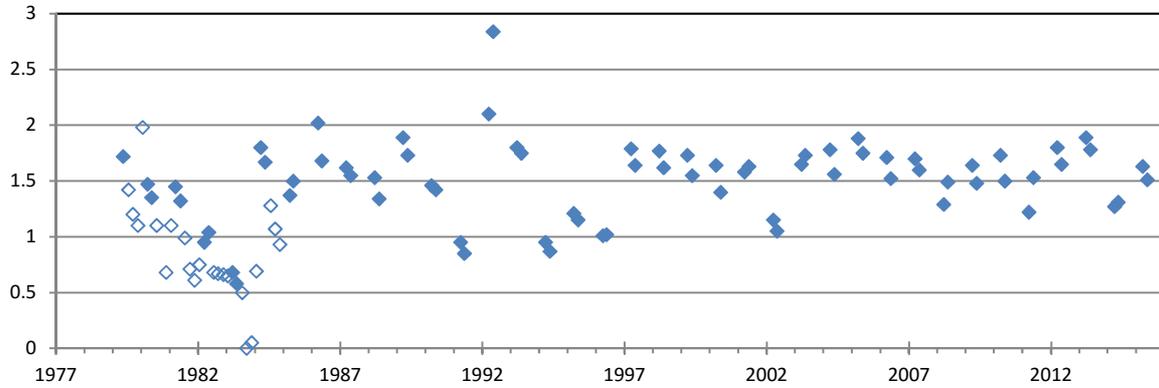
**Notes:**

1. <sup>IM</sup> indicates this is one of 25 wetlands Intensively Monitored for additional biological and physico-chemical attributes.
2. Year labels are positioned at 1<sup>st</sup> July each year.
3. Data are from September and November routine monitoring periods only.

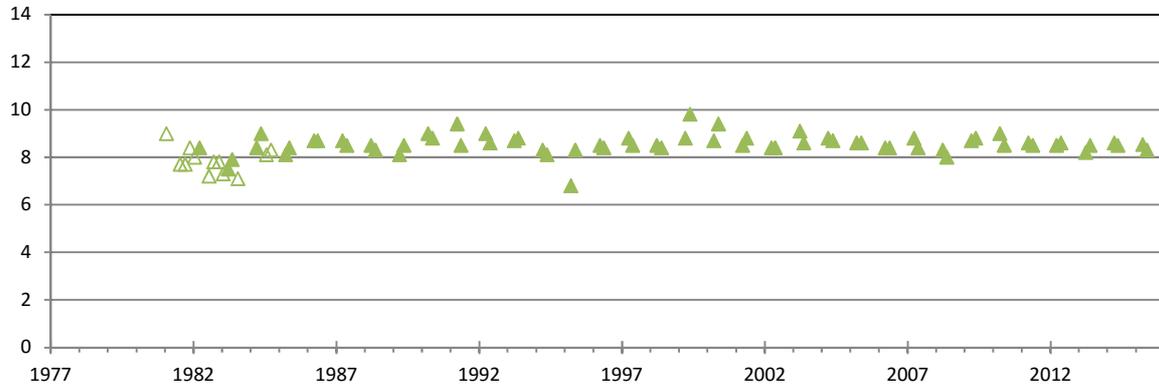
Goonaping is in the Perth Hills District (headquartered in Mundaring) of the Swan DPaW Region.

# GORE

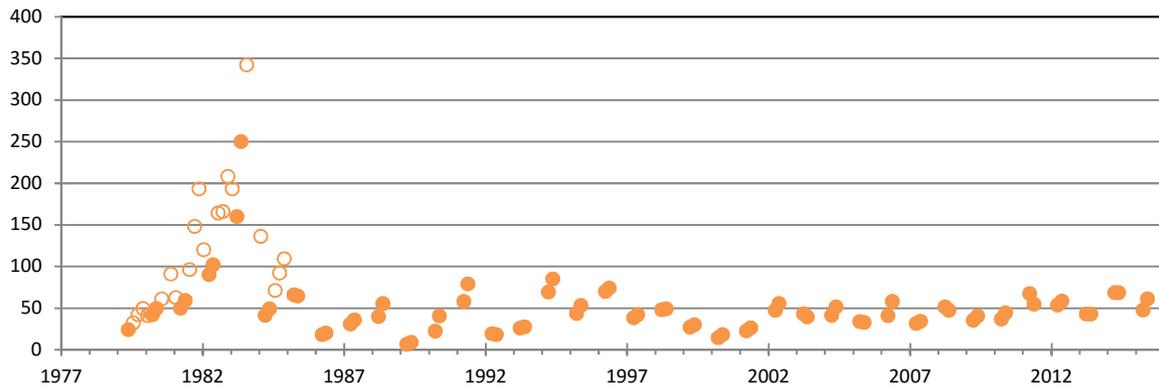
Depth (mLD)



pH



Salinity (ppt)



**Notes:**

1. Year labels are positioned at 1<sup>st</sup> July each year.
2. Data are from Sept and Nov (filled symbols) and Jan, Mar, May & July (empty symbols) routine monitoring periods only.

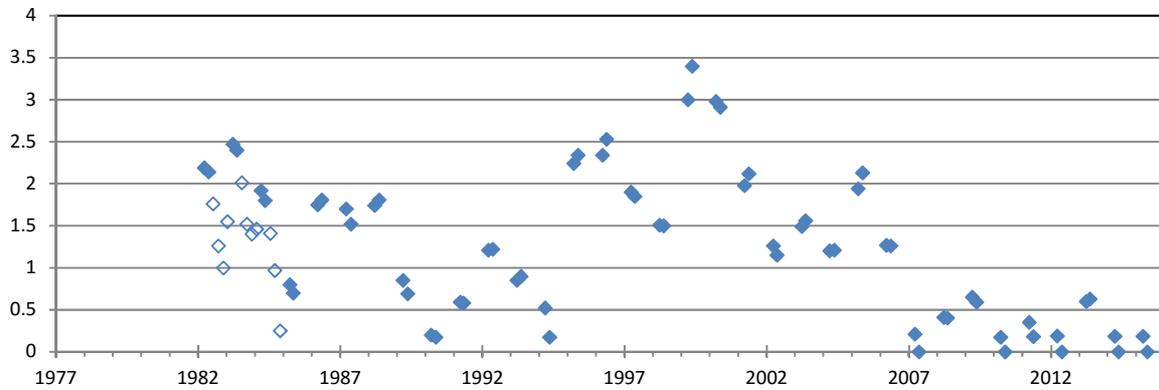
Lake Gore is listed as a Wetland of International Importance under the 'Ramsar' Convention on Wetlands.

Lake Gore is also a component of the 'Lake Gore System', which is listed in the 'Directory of Important Wetlands in Australia'.

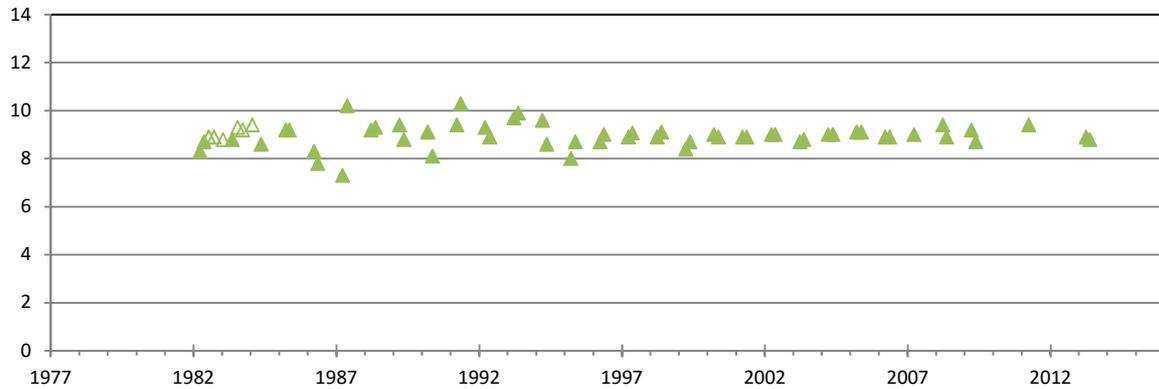
Gore is in the Esperance District of the South Coast DPaW Region.

## GURAGA (with Salinity axis 0-250ppt)

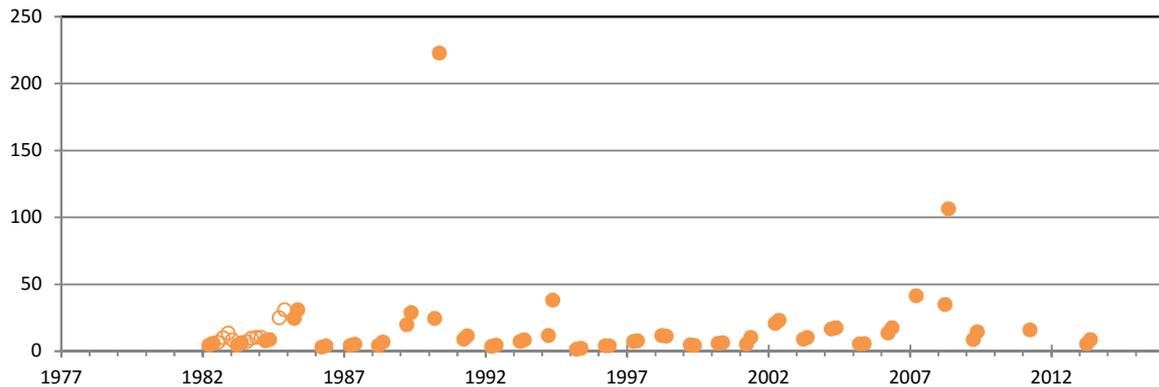
Depth (mLD)



pH



Salinity (ppt)



### Notes:

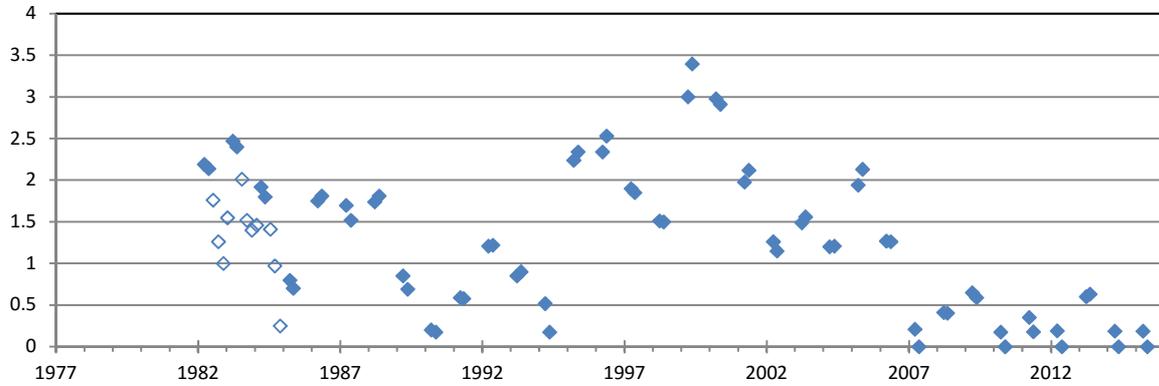
1. Year labels are positioned at 1<sup>st</sup> July each year.
2. Data are from Sept and Nov (filled symbols) and Jan, Mar, May & July (empty symbols) routine monitoring periods only.

Guraga Lake is listed in the 'Directory of Important Wetlands in Australia'.

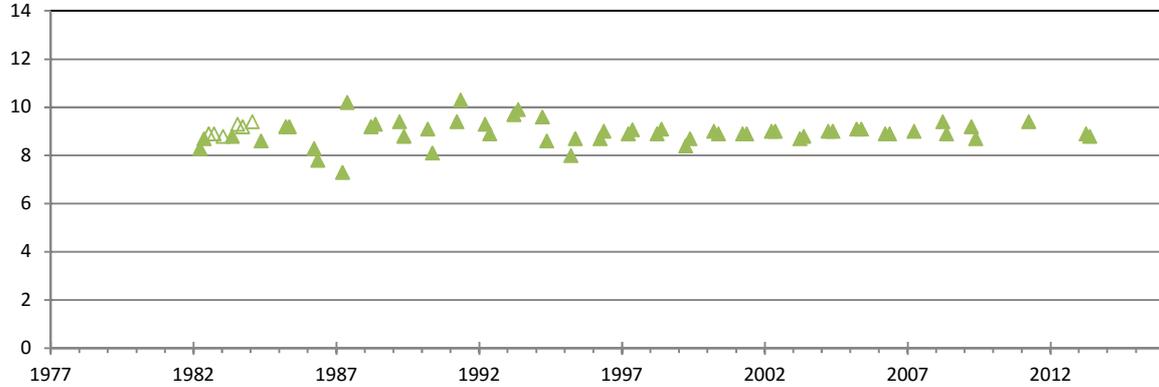
Guraga is in the Moora District (headquartered in Jurien Bay) of the Midwest DPaw Region.

## GURAGA (with Salinity axis 0-125ppt)

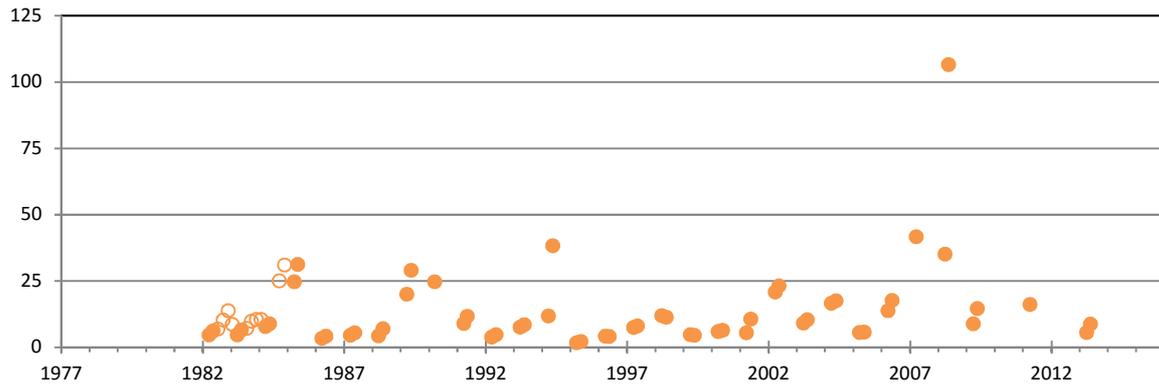
Depth (mLD)



pH



Salinity (ppt)



**Notes:**

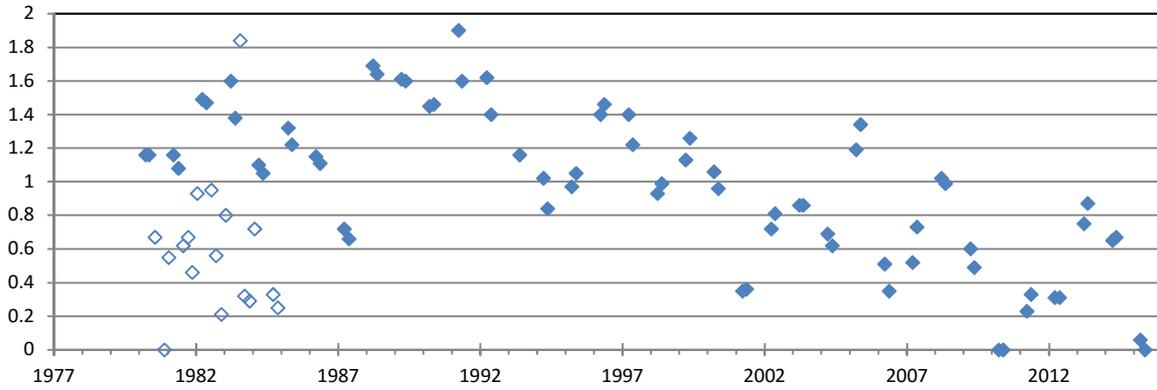
1. Year labels are positioned at 1<sup>st</sup> July each year.
2. Data are from Sept and Nov (filled symbols) and Jan, Mar, May & July (empty symbols) routine monitoring periods only.

Guraga Lake is listed in the 'Directory of Important Wetlands in Australia'.

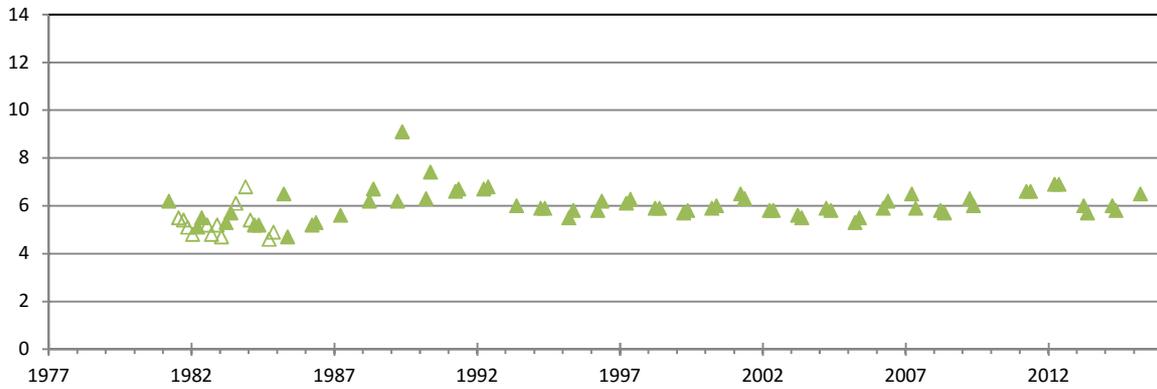
Guraga is in the Moora District (headquartered in Jurien Bay) of the Midwest DPaW Region.

## HARVEY 12632

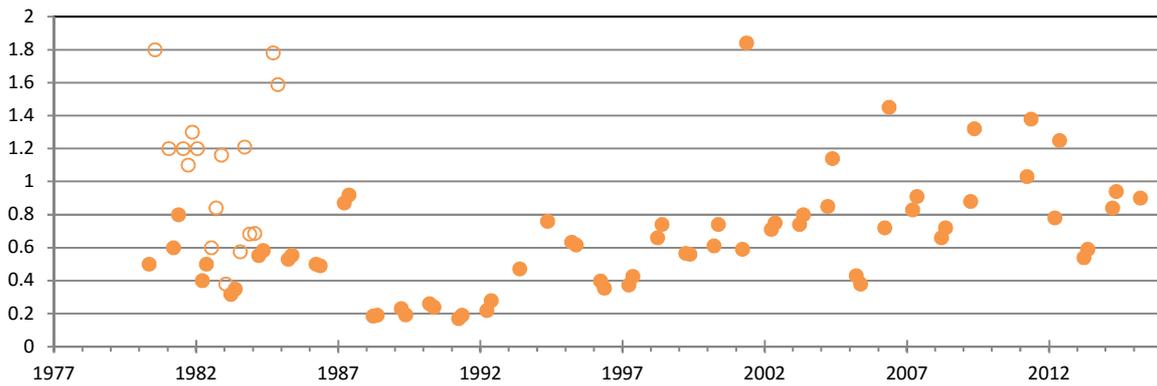
Depth (mLD)



pH



Salinity (ppt)



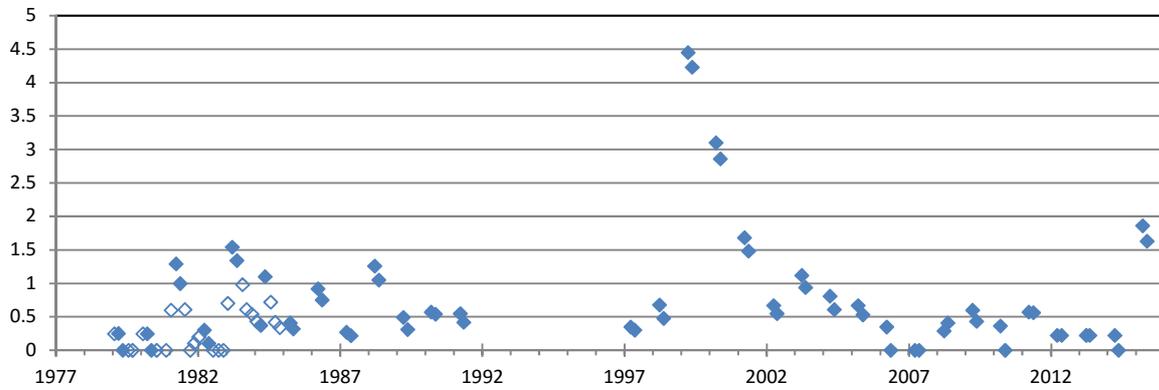
**Notes:**

1. Year labels are positioned at 1<sup>st</sup> July each year.
2. Data are from Sept and Nov (filled symbols) and Jan, Mar, May & July (empty symbols) routine monitoring periods only.

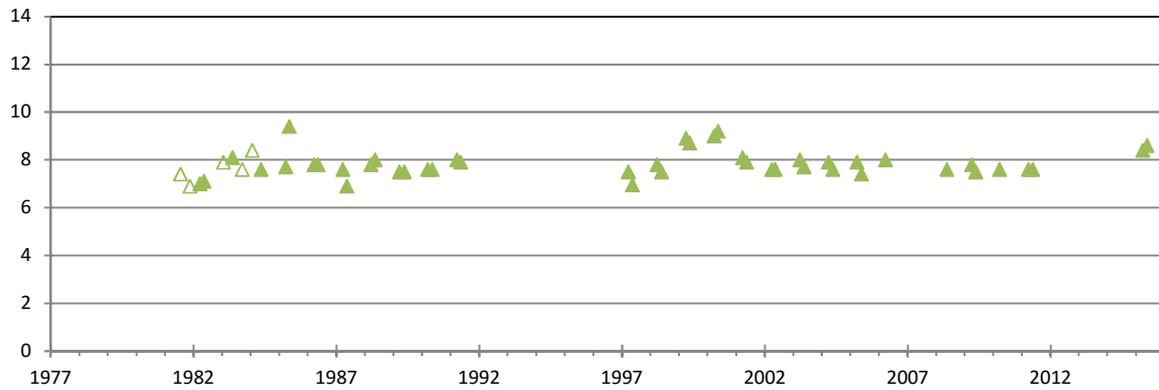
Harvey 12632 is in the Wellington District (headquartered in Collie) of the South West DPaW Region.

# HINDS

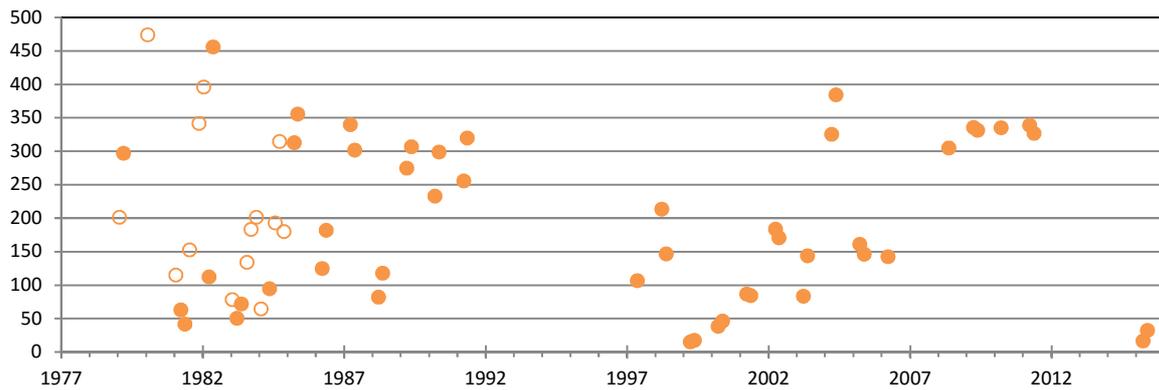
Depth (mLD)



pH



Salinity (ppt)



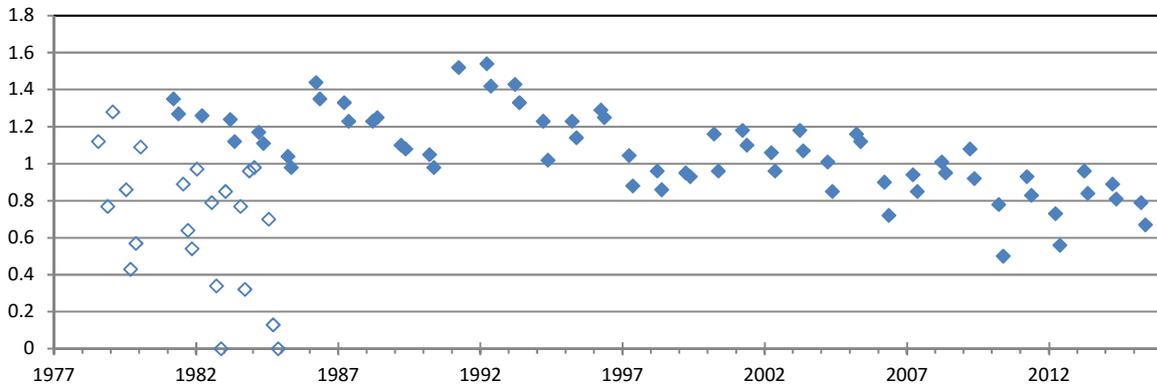
**Notes:**

1. Year labels are positioned at 1<sup>st</sup> July each year.
2. Data are from Sept and Nov (filled symbols) and Jan, Mar, May & July (empty symbols) routine monitoring periods only.

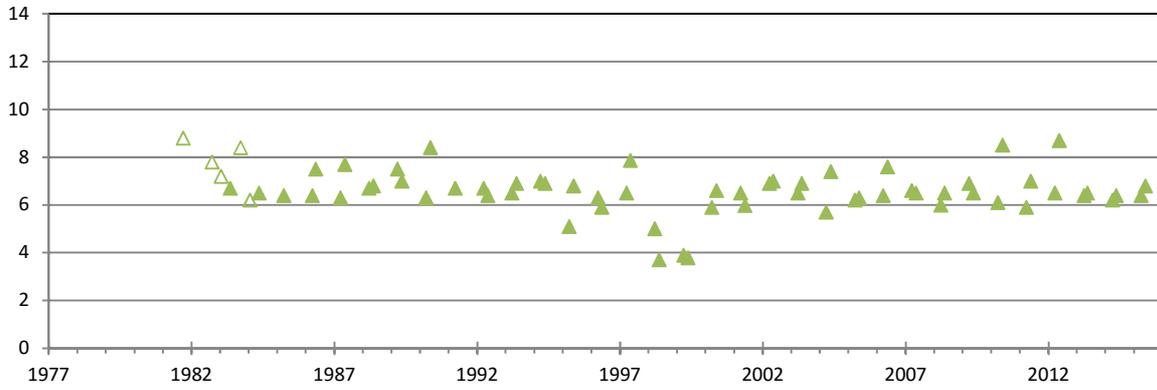
Hinds is in the Central District (headquartered in Merredin) of the Wheatbelt DPaW Region.

# JANDABUP

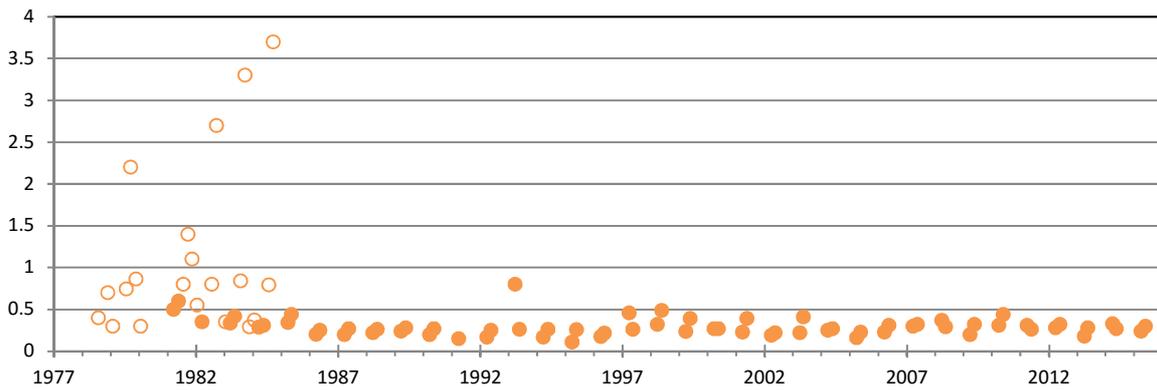
Depth (mLD)



pH



Salinity (ppt)

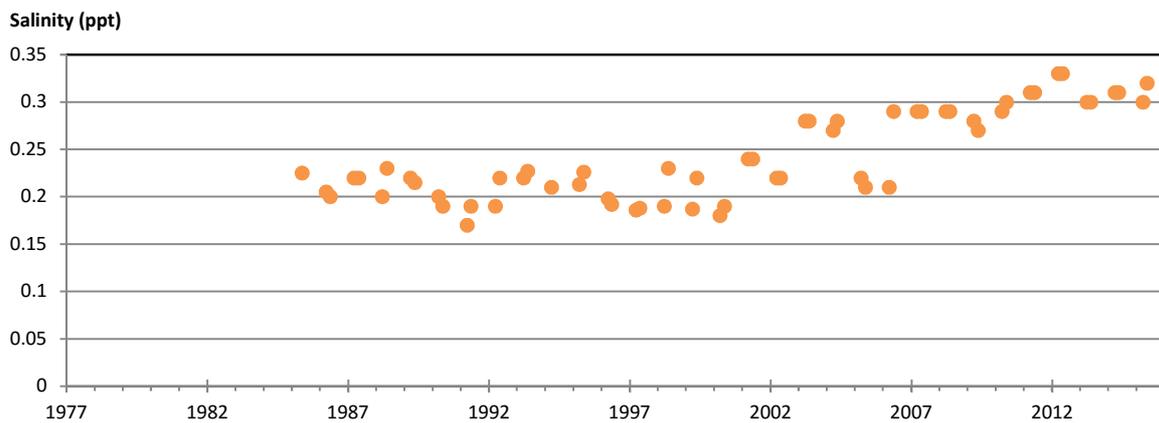
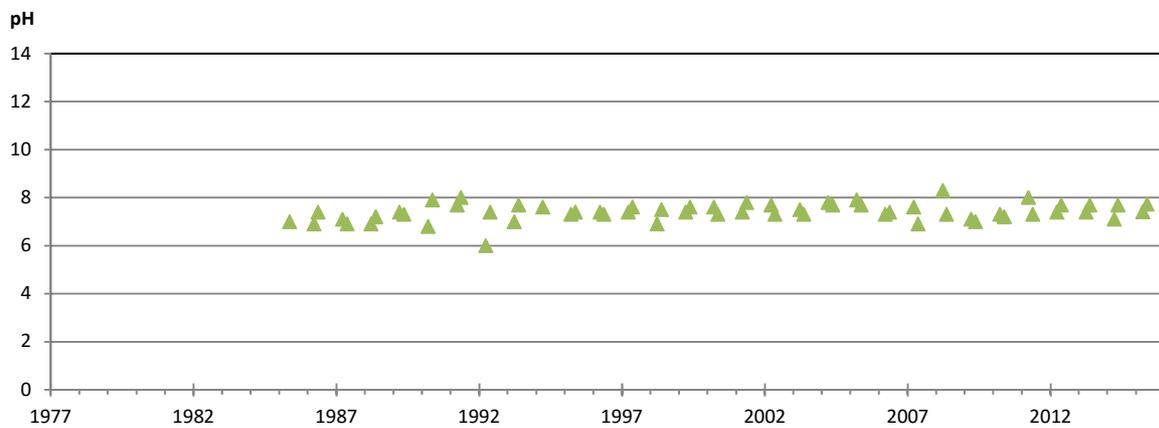
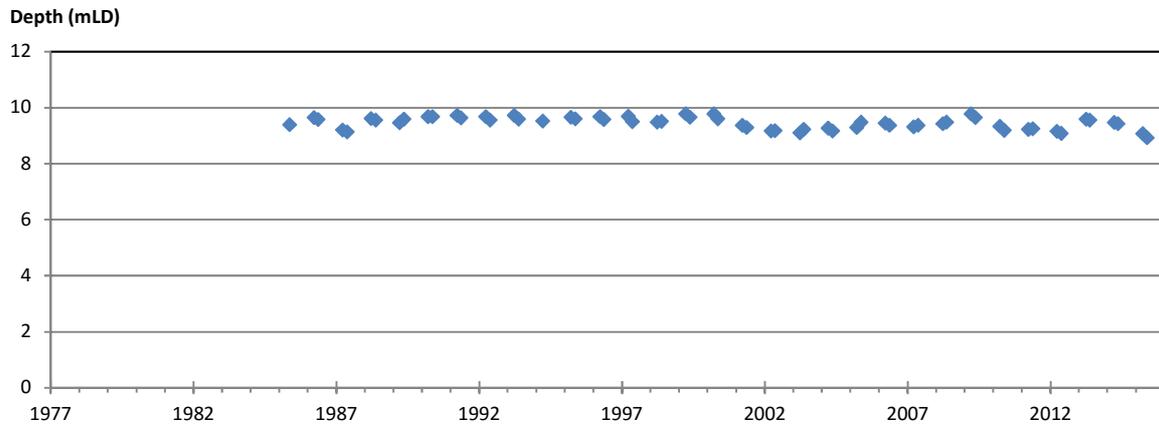


**Notes:**

1. Year labels are positioned at 1<sup>st</sup> July each year.
2. Data are from Sept and Nov (filled symbols) and Jan, Mar, May & July (empty symbols) routine monitoring periods only.

Jandabup is in the Swan Coastal District (headquartered in Wanneroo) of the Swan DPaW Region.

## JASPER (with Depth axis 0-12m)



### Notes:

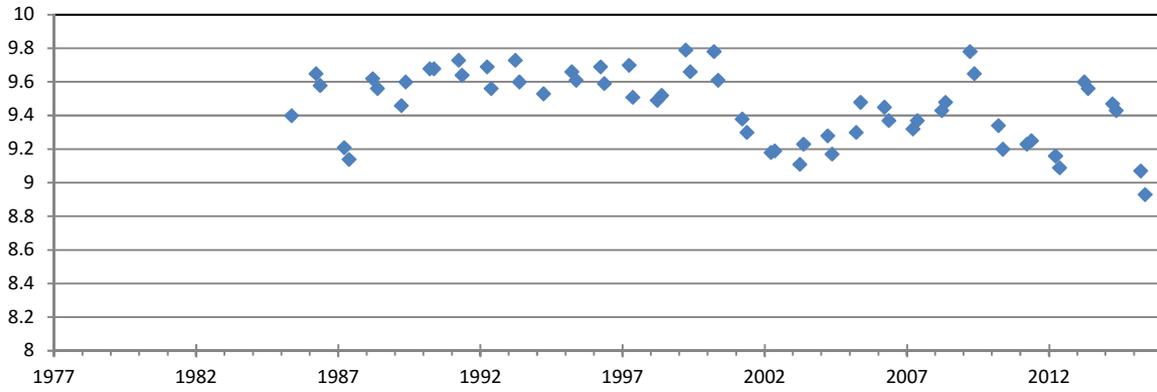
1. Year labels are positioned at 1<sup>st</sup> July each year.
2. Data are from September and November routine monitoring periods only.

Jasper is a component of the 'Gingilup-Jasper Wetland System', which is listed in the 'Directory of Important Wetlands in Australia'.

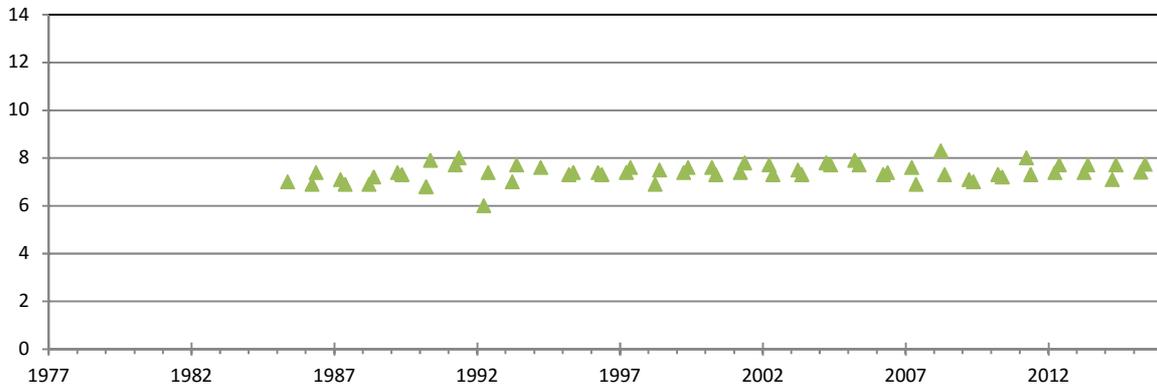
Jasper is in the Donnelly District (headquartered in Pemberton) of the Warren DPaw Region.

## JASPER (with Depth axis 8-10m)

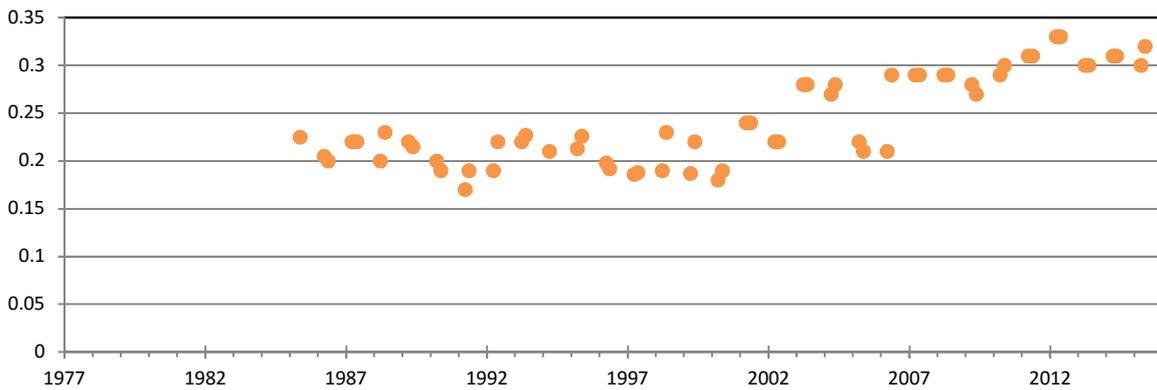
**Depth (mLD)**



**pH**



**Salinity (ppt)**



**Notes:**

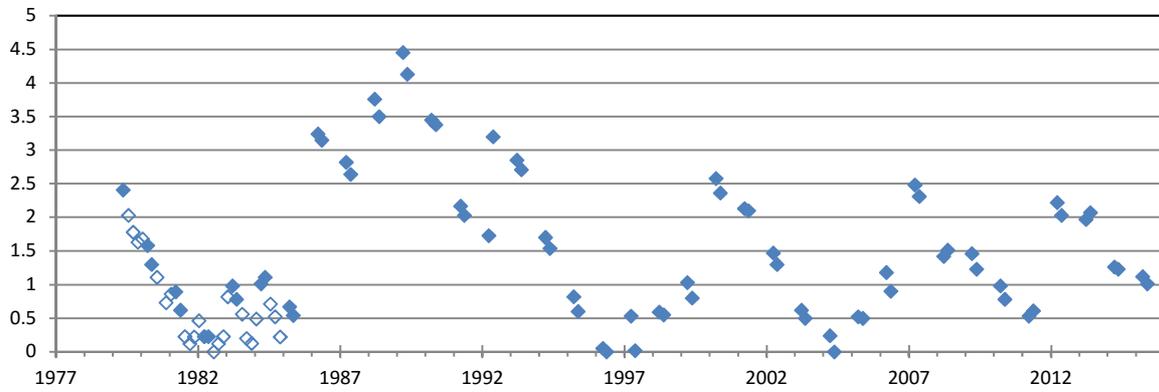
1. Year labels are positioned at 1<sup>st</sup> July each year.
2. Data are from September and November routine monitoring periods only.

Jasper is a component of the 'Gingilup-Jasper Wetland System', which is listed in the 'Directory of Important Wetlands in Australia'.

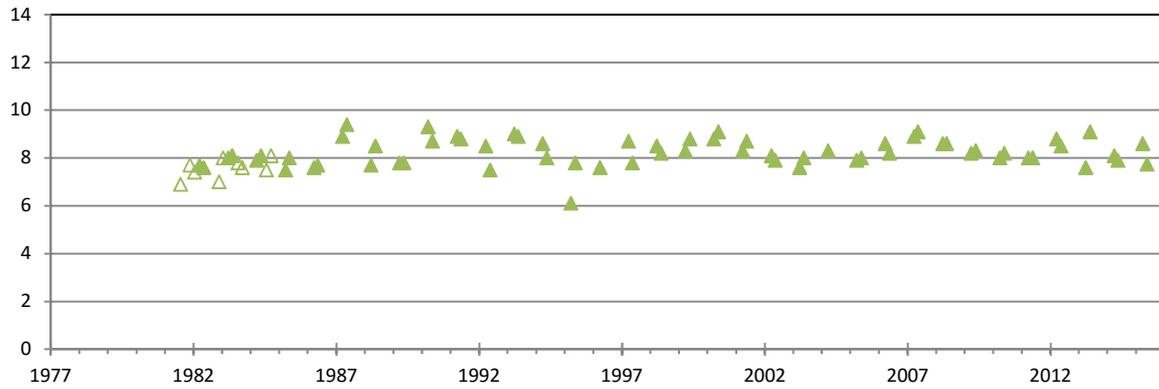
Jasper is in the Donnelly District (headquartered in Pemberton) of the Warren DPaW Region.

# JERDACUTTUP

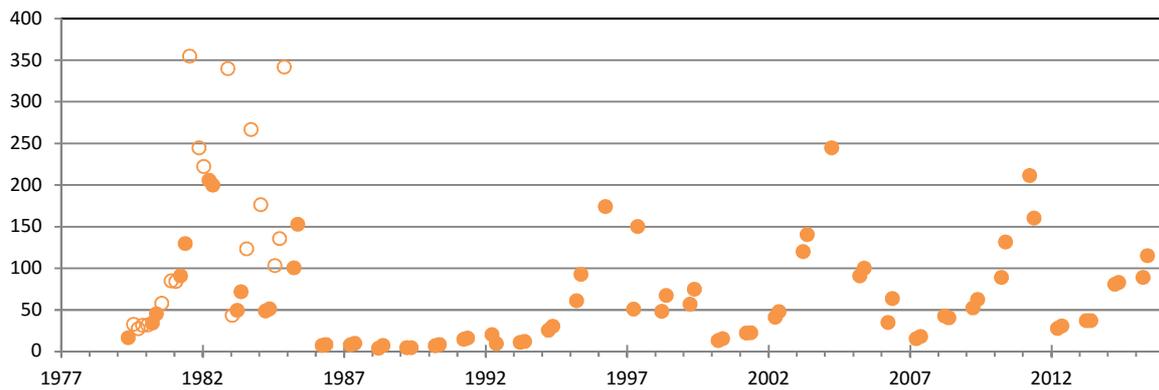
Depth (mLD)



pH



Salinity (ppt)



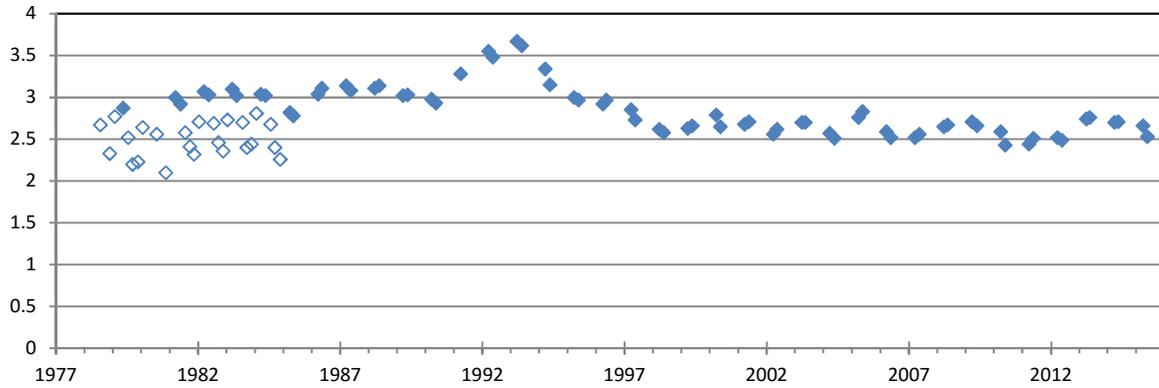
**Notes:**

1. Year labels are positioned at 1<sup>st</sup> July each year.
2. Data are from Sept and Nov (filled symbols) and Jan, Mar, May & July (empty symbols) routine monitoring periods only.

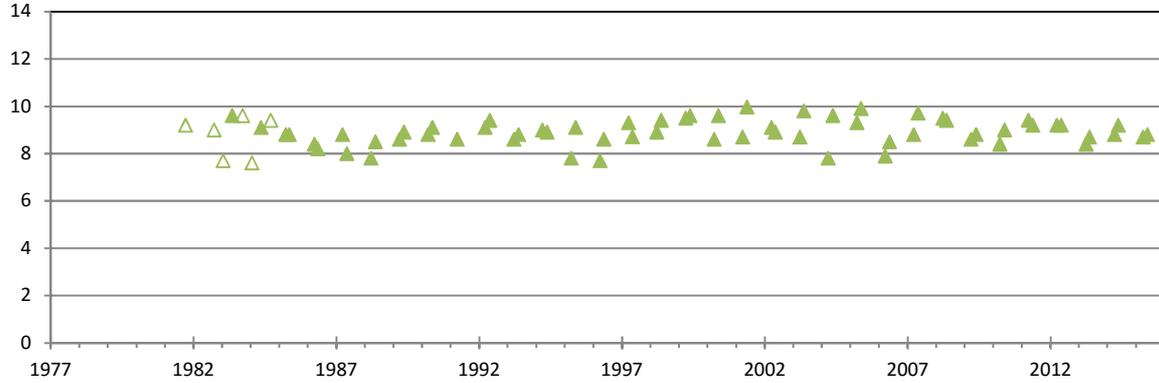
Jerdacuttup is in the Albany District of the South Coast DPaw Region

# JOONDALUP

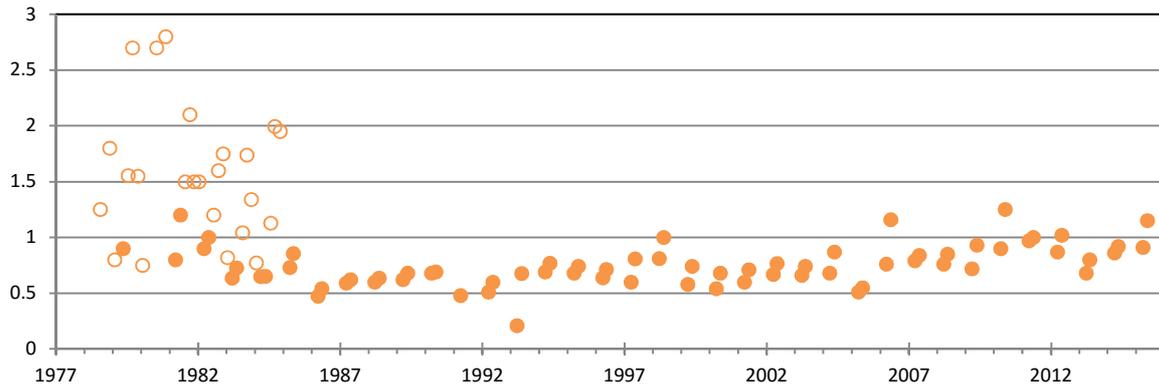
Depth (mLD)



pH



Salinity (ppt)



**Notes:**

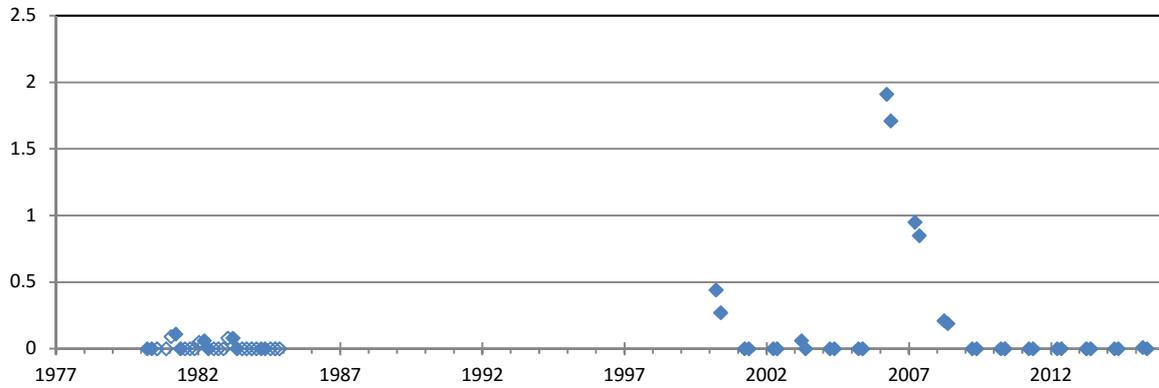
1. Year labels are positioned at 1<sup>st</sup> July each year.
2. Data are from Sept and Nov (filled symbols) and Jan, Mar, May & July (empty symbols) routine monitoring periods only.

Joondalup Lake is listed in the 'Directory of Important Wetlands in Australia'.

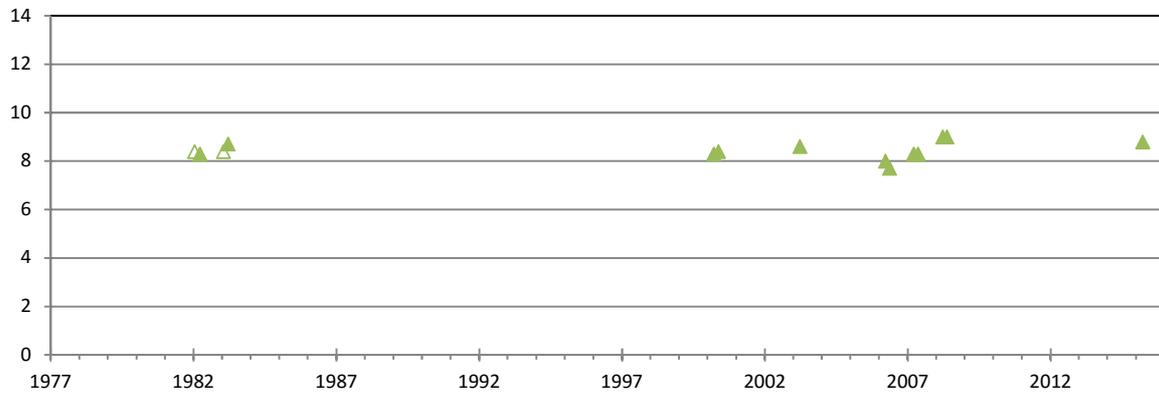
Joondalup is in the Swan Coastal District (headquartered in Wanneroo) of the Swan DPaW Region.

## KENT 29020

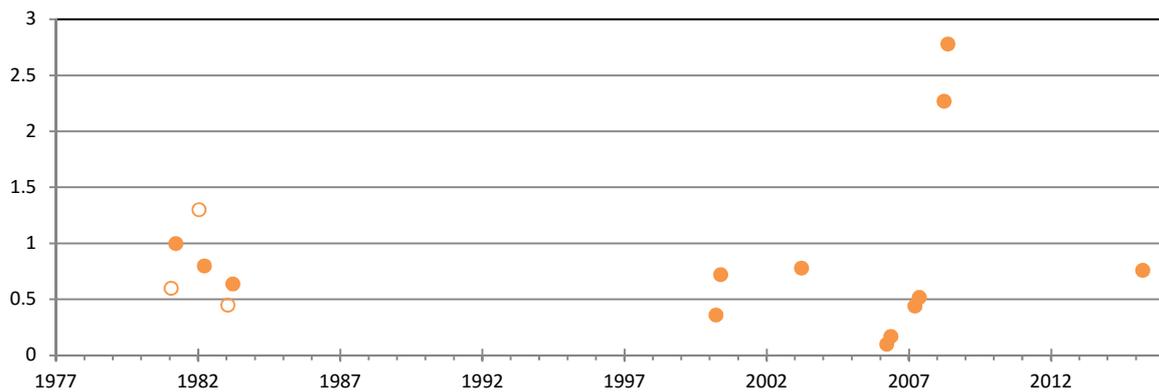
**Depth (mLD)**



**pH**



**Salinity (ppt)**



**Notes:**

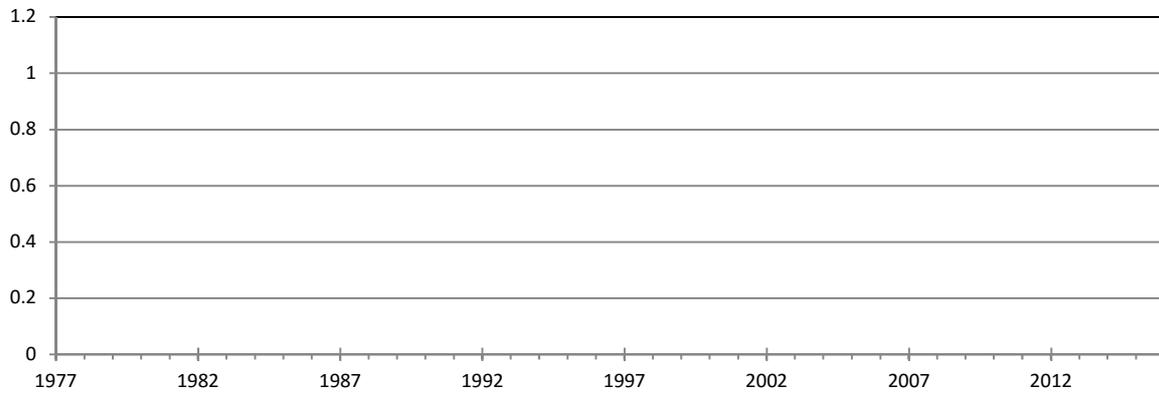
1. Year labels are positioned at 1<sup>st</sup> July each year.
2. Data are from Sept and Nov (filled symbols) and Jan, Mar, May & July (empty symbols) routine monitoring periods only.

Kent 29020 (also known as East Lake Bryde) is a component of the 'Lake Bryde – East Lake Bryde System', which is listed in the 'Directory of Important Wetlands in Australia'.

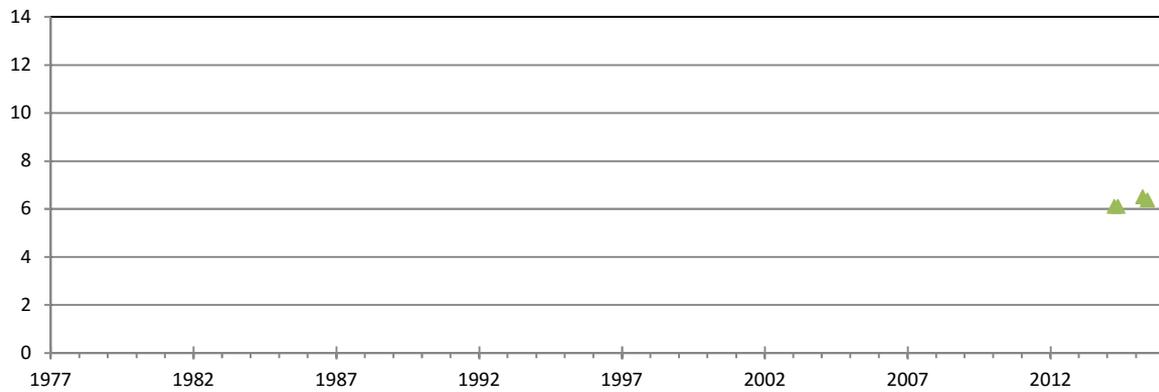
Kent 29020 is within the Lake Bryde Natural Diversity Recovery Catchment and is in the Southern Wheatbelt geographical area (headquartered in Narrogin) of the Wheatbelt DPaW Region.

## KULUNILUP

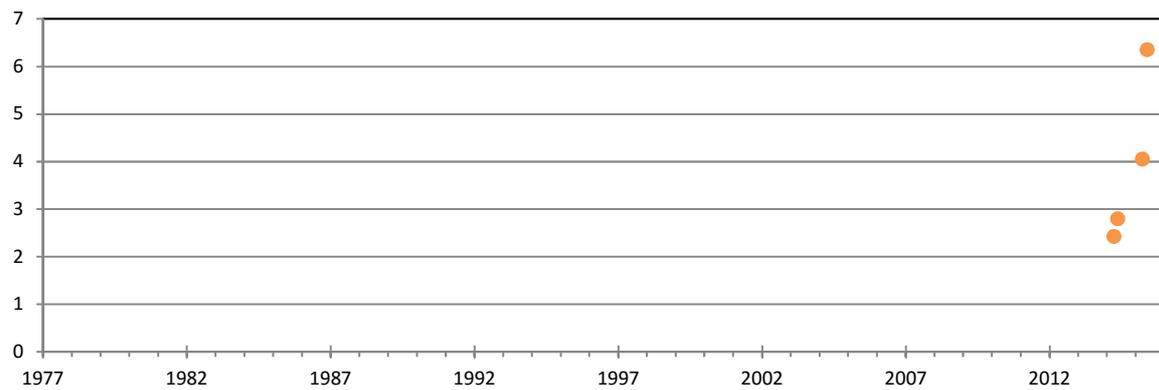
Depth (mLD)



pH



Salinity (ppt)



**Notes:**

1. Year labels are positioned at 1<sup>st</sup> July each year.
2. Data are from September and November routine monitoring periods only.
3. The depth gauge at Kulunilup is 'uncalibrated', as it has yet to be surveyed to the deepest point in this wetland.

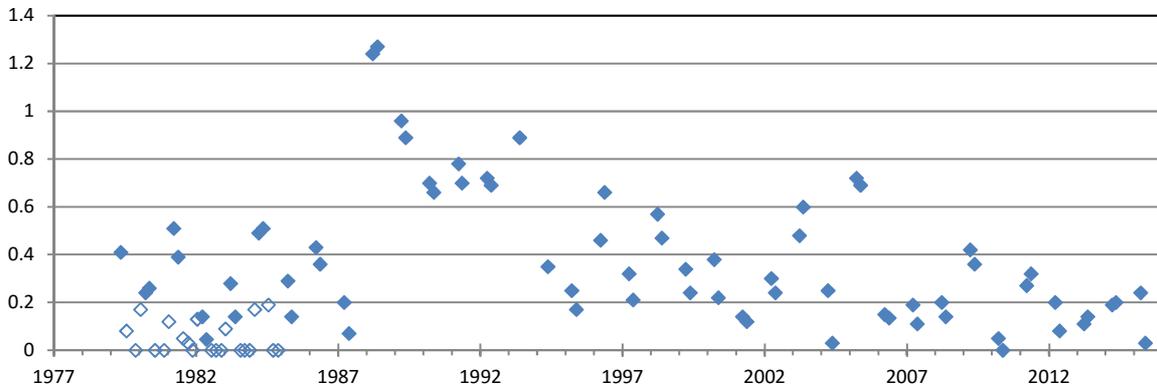
Kulunilup is a component of the 'Byenup Lagoon System', which is listed in the 'Directory of Important Wetlands in Australia'.

Kulunilup is within the former Muir-Unicup Natural Diversity Recovery Catchment.

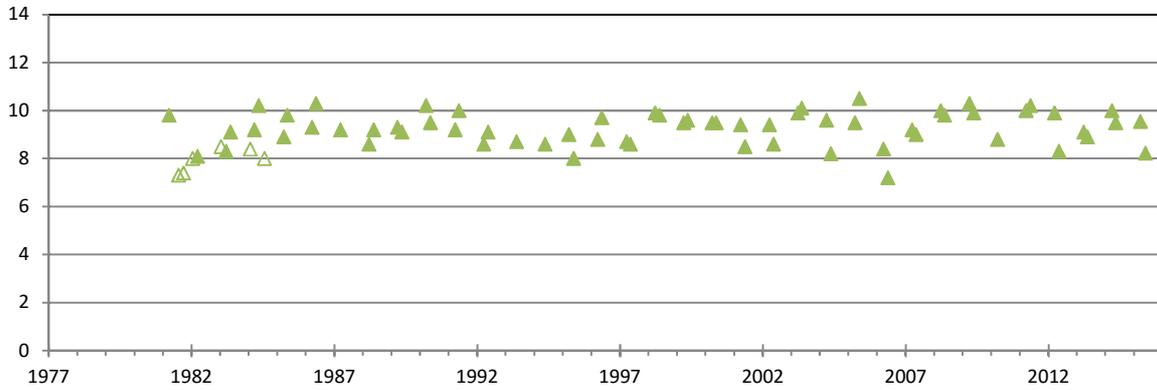
Kulunilup is in the Donnelly District (headquartered in Pemberton) of the Warren DPaW Region.

# KWORNICUP

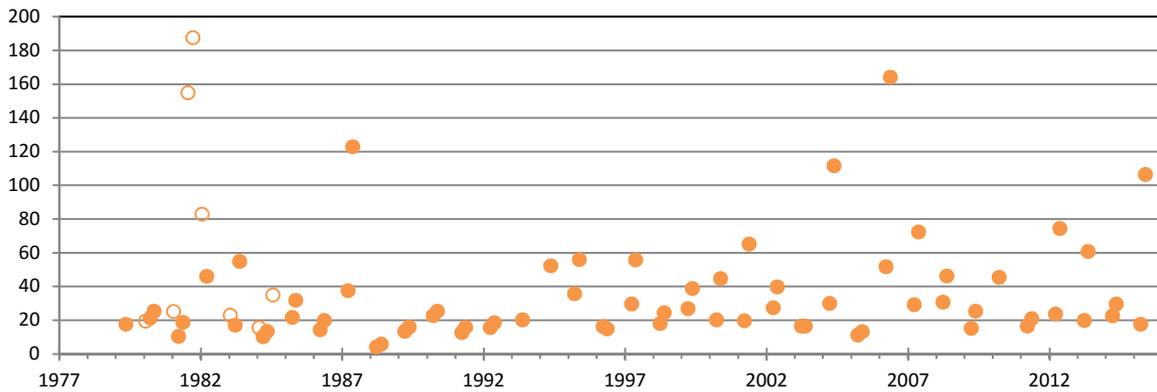
Depth (mLD)



pH



Salinity (ppt)



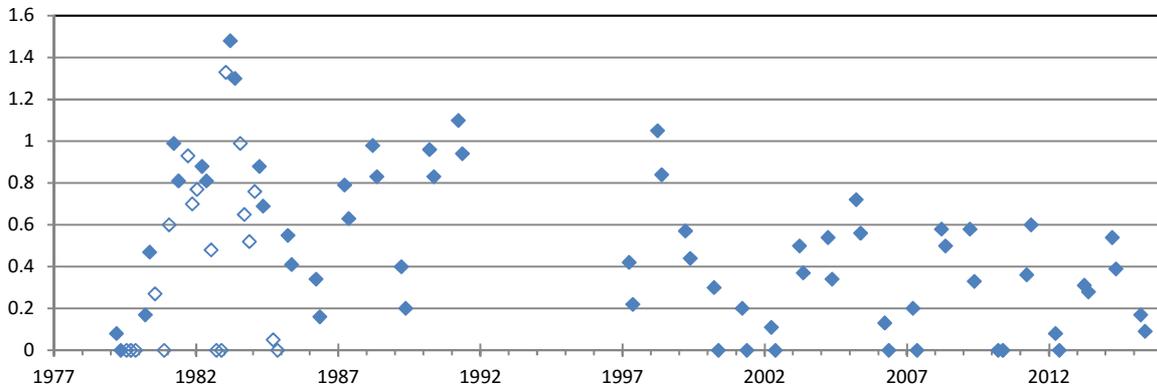
**Notes:**

1. Year labels are positioned at 1<sup>st</sup> July each year.
2. Data are from Sept and Nov (filled symbols) and Jan, Mar, May & July (empty symbols) routine monitoring periods only.

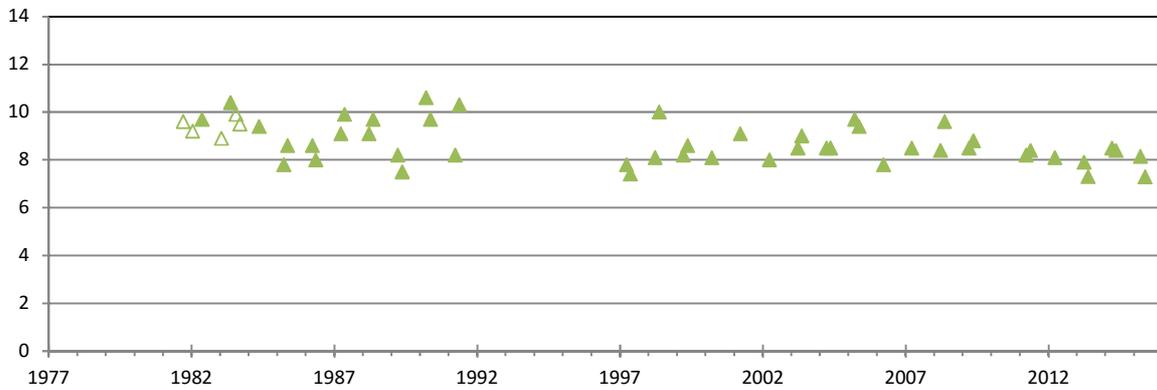
Kwornicup is in the Frankland District (headquartered in Walpole) of the Warren DPaW Region.

# LITTLE WHITE

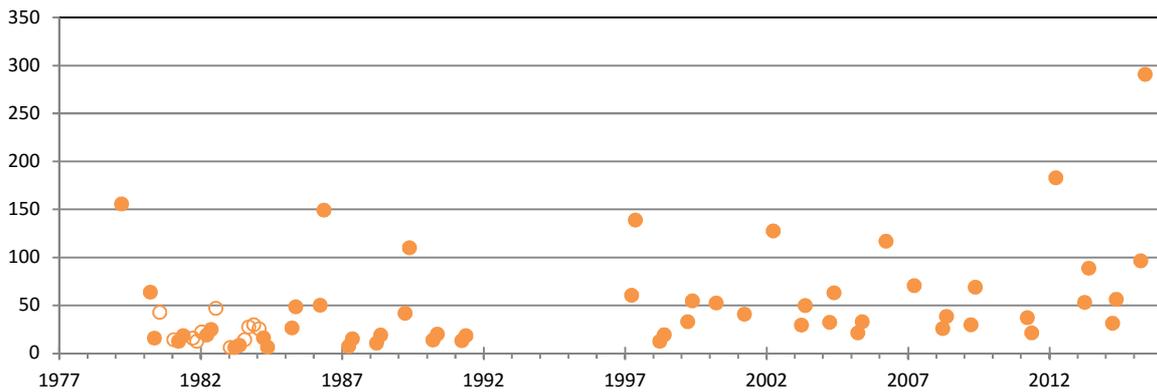
Depth (mLD)



pH



Salinity (ppt)



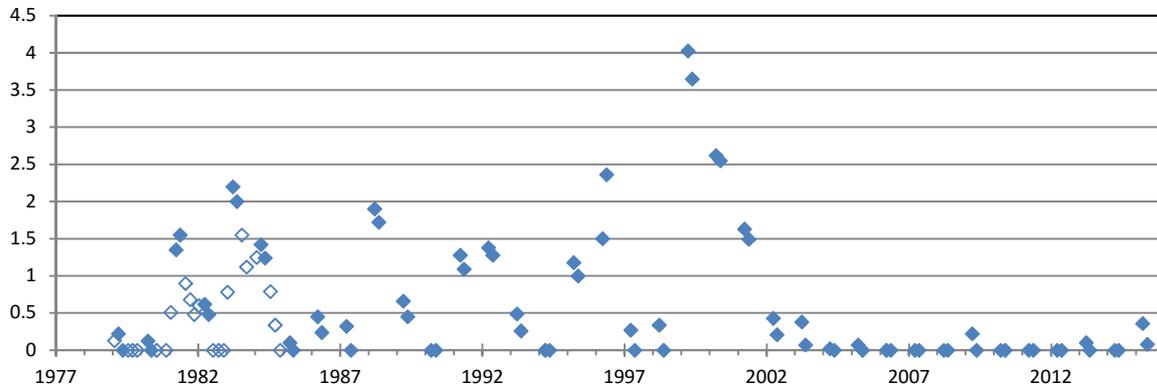
**Notes:**

1. Year labels are positioned at 1<sup>st</sup> July each year.
2. Data are from Sept and Nov (filled symbols) and Jan, Mar, May & July (empty symbols) routine monitoring periods only.

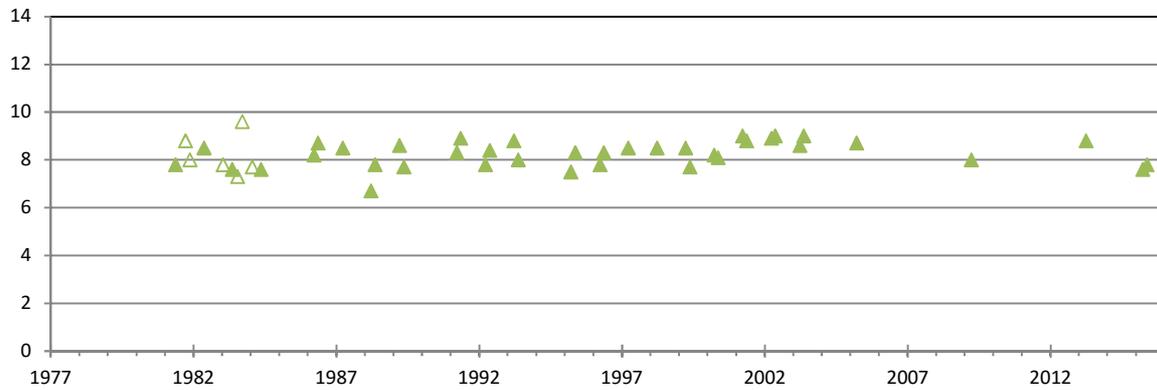
Little White is in the Southern Wheatbelt geographical area (headquartered in Narrogin) of the Wheatbelt DPaW Region.

## LOGUE <sup>IM</sup>

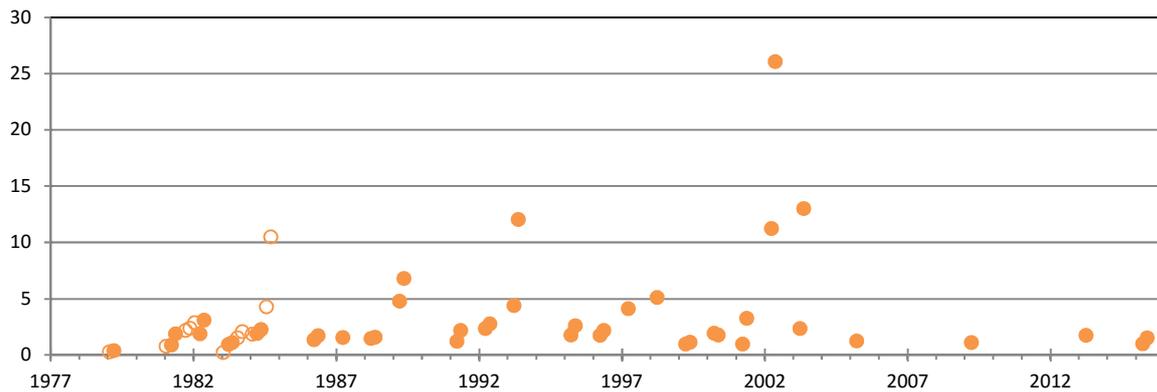
### Depth (mLD)



### pH



### Salinity (ppt)



#### Notes:

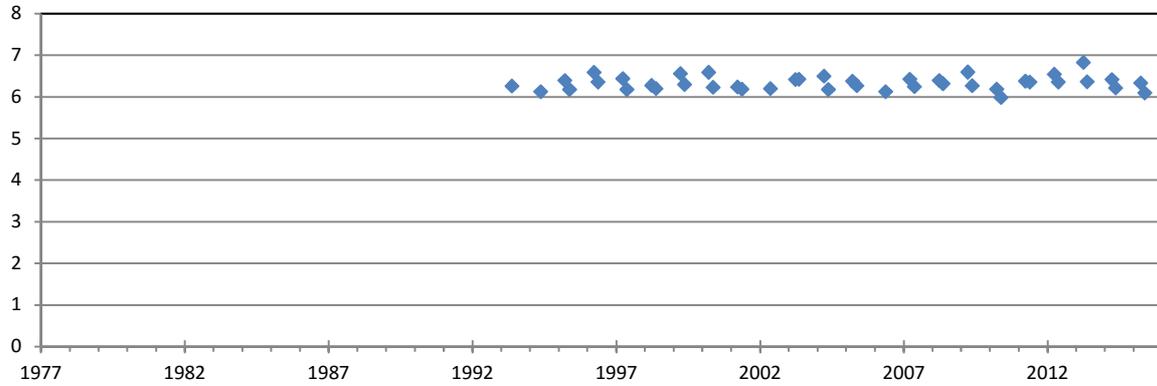
1. <sup>IM</sup> indicates this is one of 25 wetlands Intensively Monitored for additional biological and physico-chemical attributes.
2. Year labels are positioned at 1<sup>st</sup> July each year.
3. Data are from Sept and Nov (filled symbols) and Jan, Mar, May & July (empty symbols) routine monitoring periods only.

Logue is a component of the 'Lake Logue-Indoon System', which is listed in the 'Directory of Important Wetlands in Australia'.

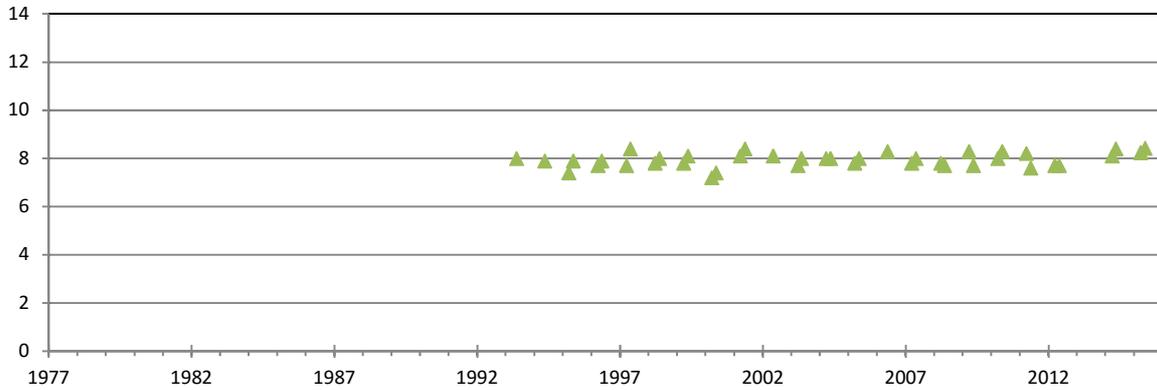
Logue is in the Moora District (headquartered in Jurien Bay) of the Midwest DPaW Region.

## MARINGUP (with Depth axis 0-7m)

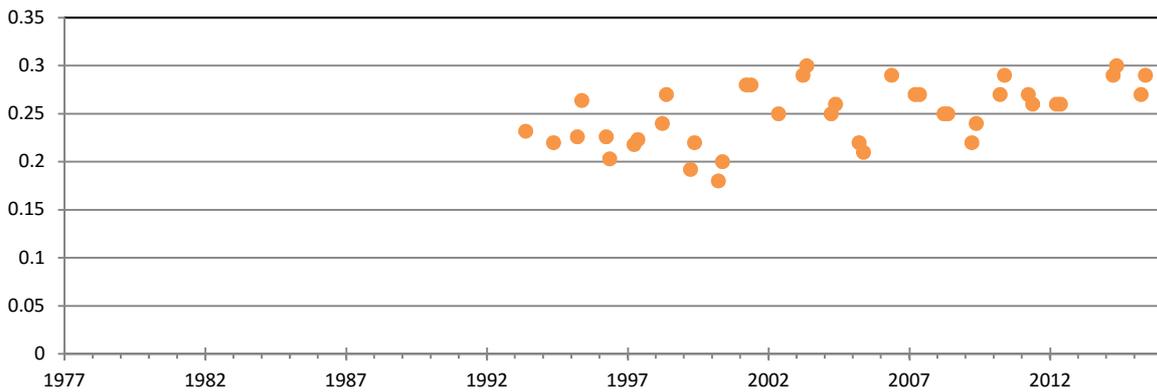
Depth (mLD)



pH



Salinity (ppt)



### Notes:

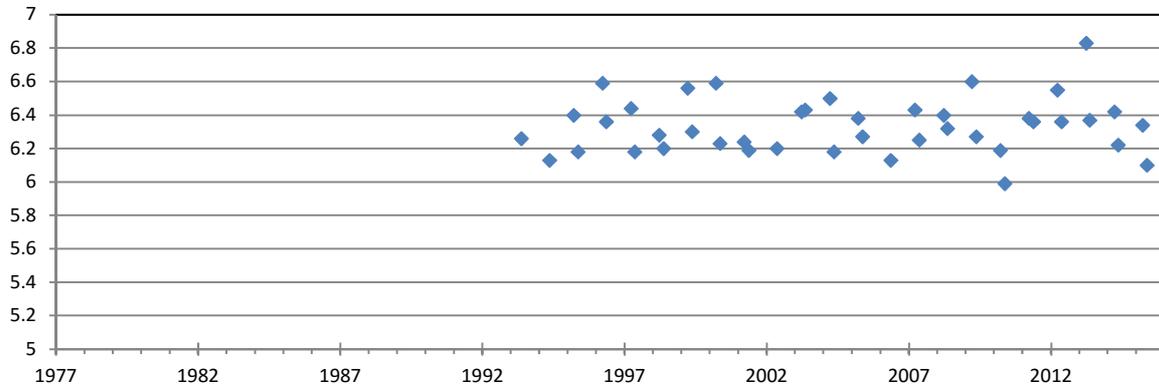
1. Year labels are positioned at 1<sup>st</sup> July each year.
2. Data are from September and November routine monitoring periods only.

Maringup Lake is listed in the 'Directory of Important Wetlands in Australia'.

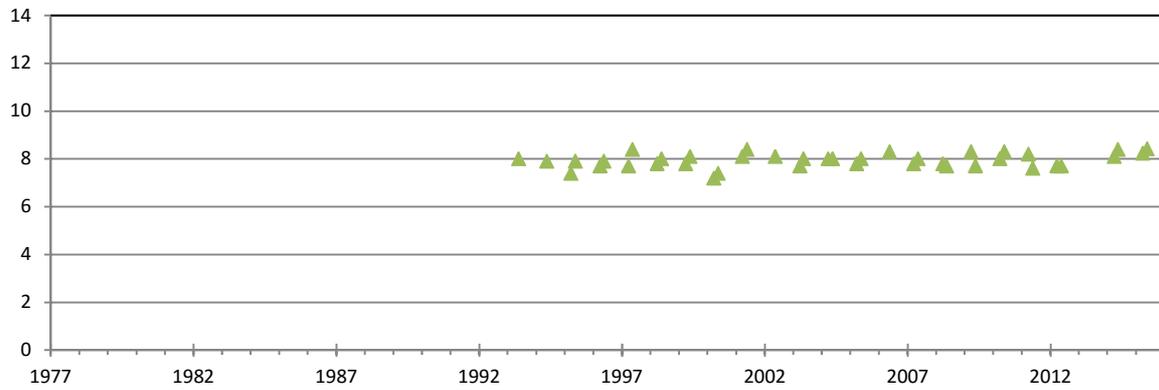
Maringup is in the Donnelly District (headquartered in Pemberton) of the Warren DPaW Region.

## MARINGUP (with Depth axis 5-7m)

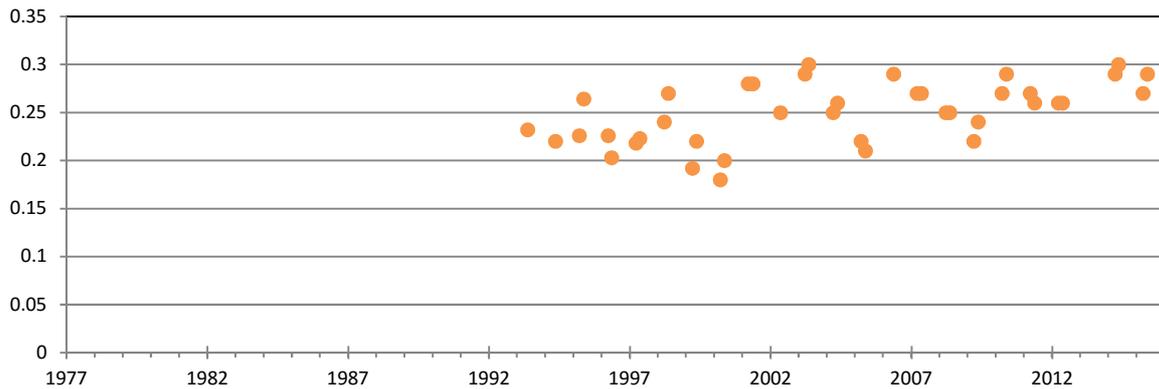
Depth (mLD)



pH



Salinity (ppt)



### Notes:

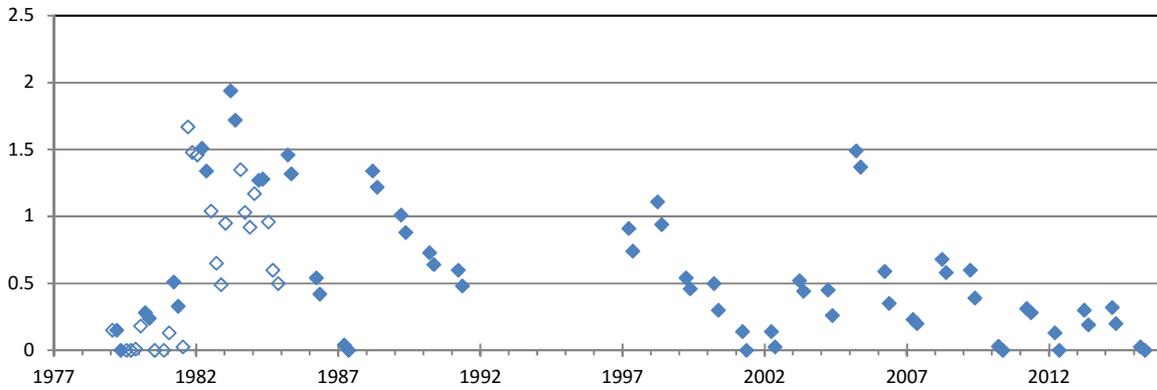
1. Year labels are positioned at 1<sup>st</sup> July each year.
2. Data are from September and November routine monitoring periods only.

Maringup Lake is listed in the 'Directory of Important Wetlands in Australia'.

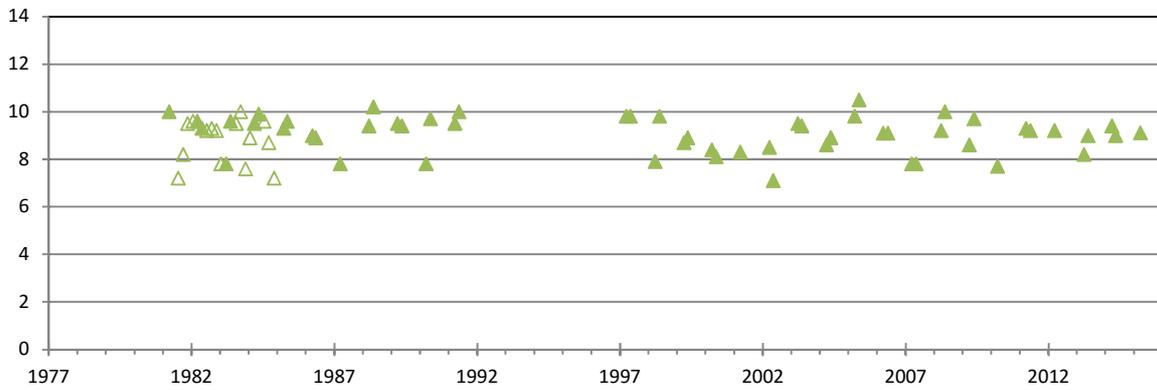
Maringup is in the Donnelly District (headquartered in Pemberton) of the Warren DPaW Region.

# MARTINUP

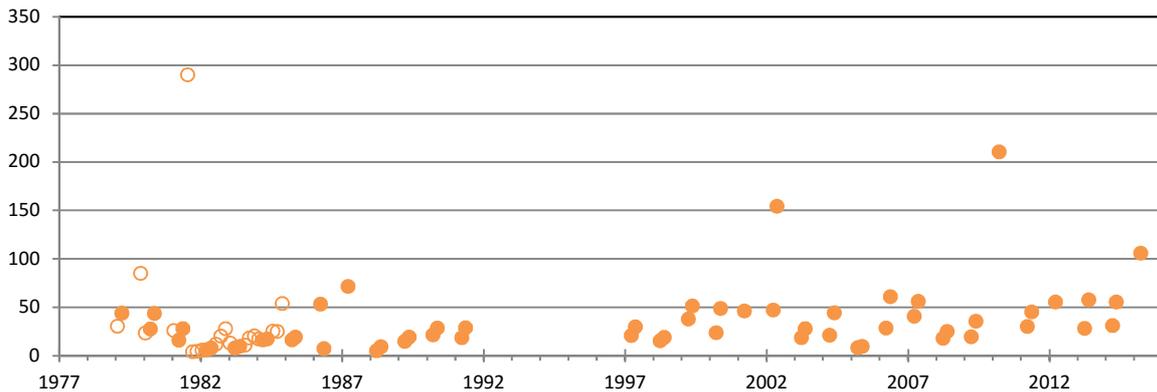
Depth (mLD)



pH



Salinity (ppt)



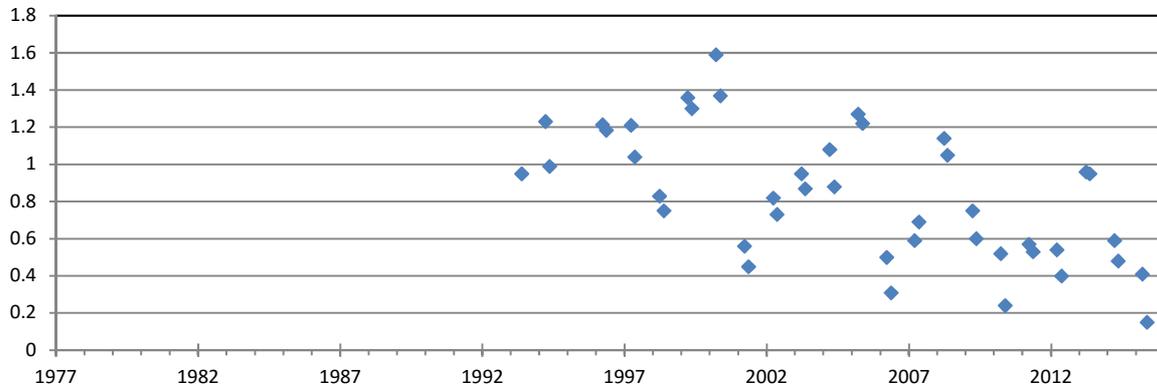
**Notes:**

1. Year labels are positioned at 1<sup>st</sup> July each year.
2. Data are from Sept and Nov (filled symbols) and Jan, Mar, May & July (empty symbols) routine monitoring periods only.

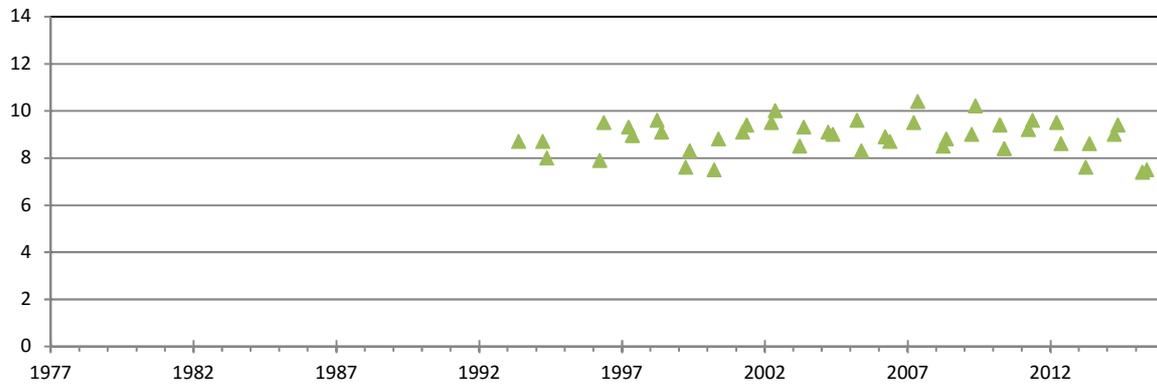
Martinup is in the Southern Wheatbelt geographical area (headquartered in Narrogin) of the Wheatbelt DPaW Region.

## McLARTY

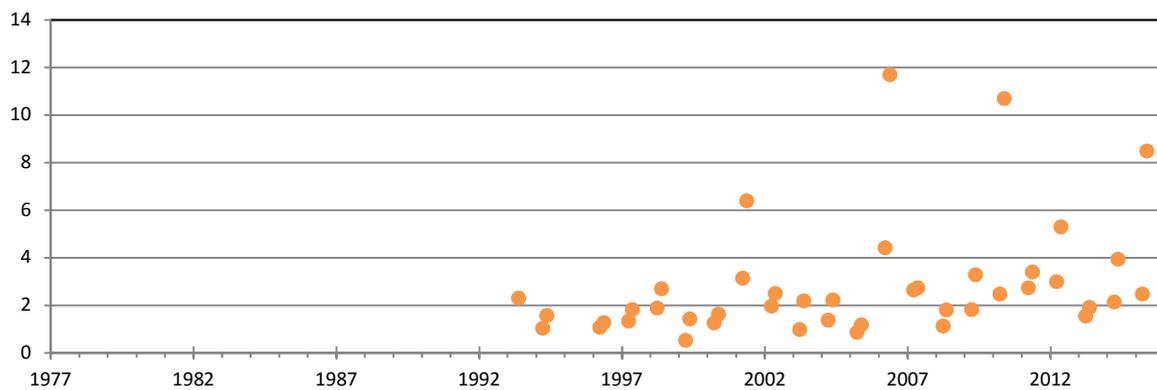
Depth (mLD)



pH



Salinity (ppt)



**Notes:**

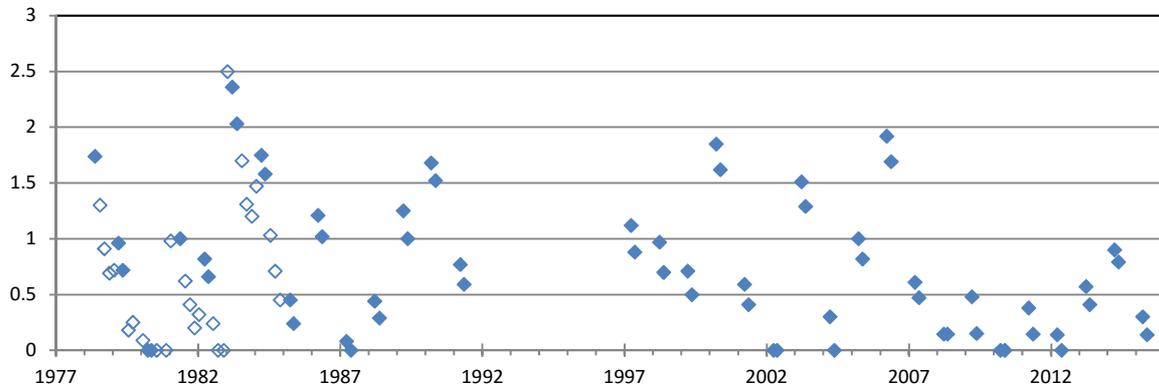
1. Year labels are positioned at 1<sup>st</sup> July each year.
2. Data are from September and November routine monitoring periods only.

McLarty is a component of the 'Peel-Yalgorup System', which is listed as a Wetland of International Importance under the 'Ramsar' Convention on Wetlands, and is also a component of the 'Lake McLarty System' listed in the 'Directory of Important Wetlands in Australia'.

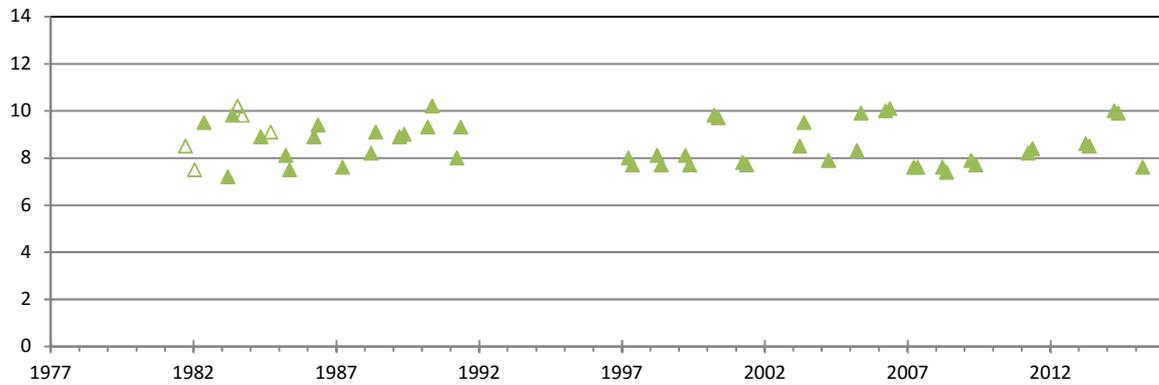
McLarty is in the Swan Coastal District (headquartered in Wanneroo) of the Swan DPaW Region.

# MEARS

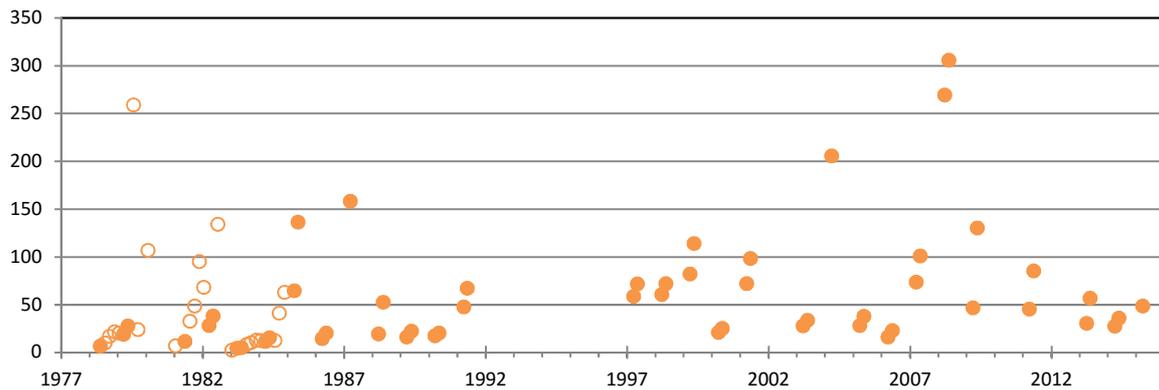
Depth (mLD)



pH



Salinity (ppt)



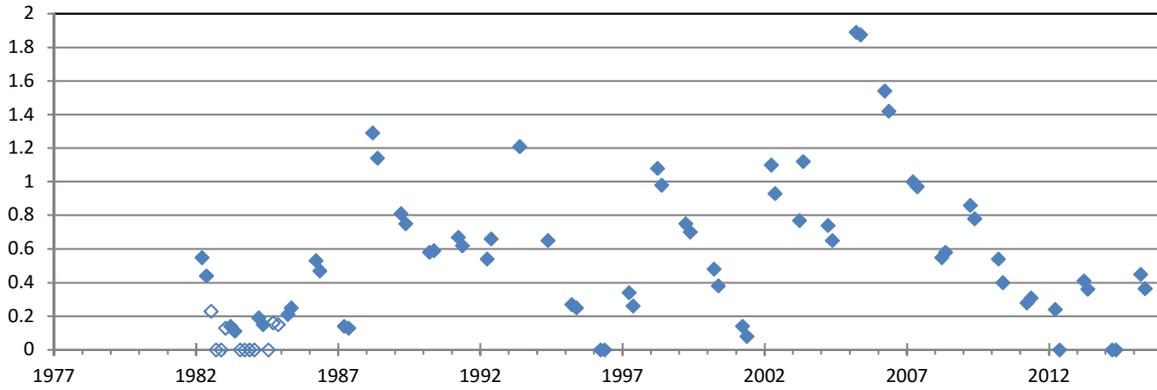
**Notes:**

1. Year labels are positioned at 1<sup>st</sup> July each year.
2. Data are from Sept and Nov (filled symbols) and Jan, Mar, May & July (empty symbols) routine monitoring periods only.

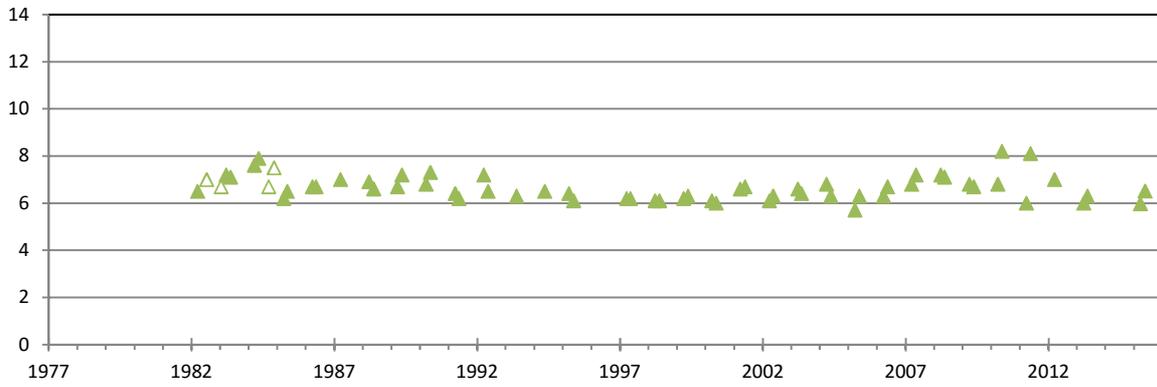
Mears is in the Southern Wheatbelt geographical area (headquartered in Narrogin) of the Wheatbelt DPaw Region.

# METTLER

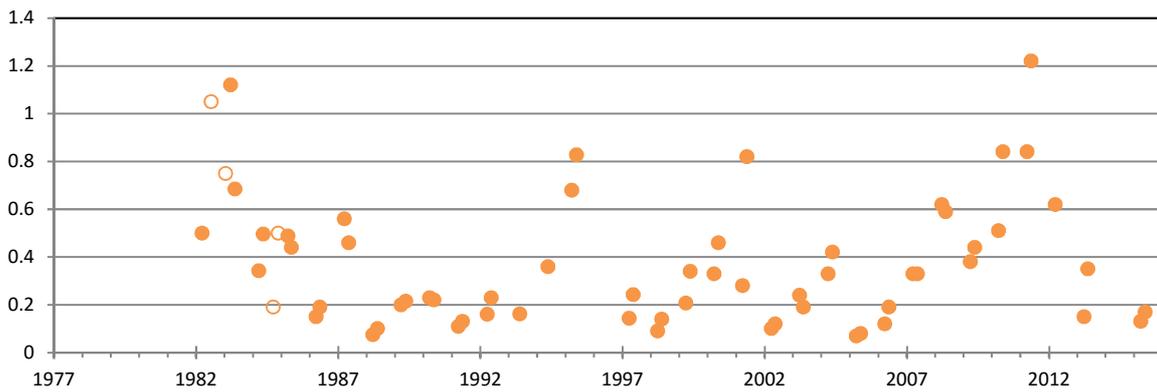
Depth (mLD)



pH



Salinity (ppt)



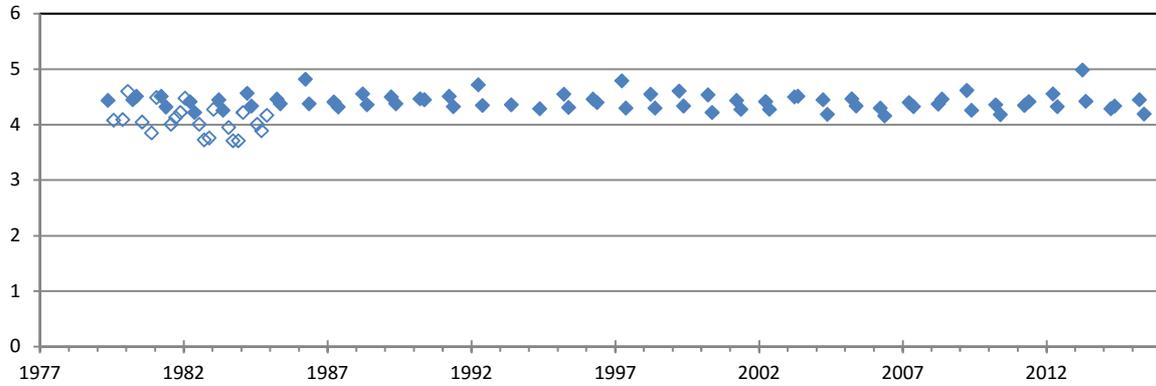
**Notes:**

1. Year labels are positioned at 1<sup>st</sup> July each year.
2. Data are from Sept and Nov (filled symbols) and Jan, Mar, May & July (empty symbols) routine monitoring periods only.

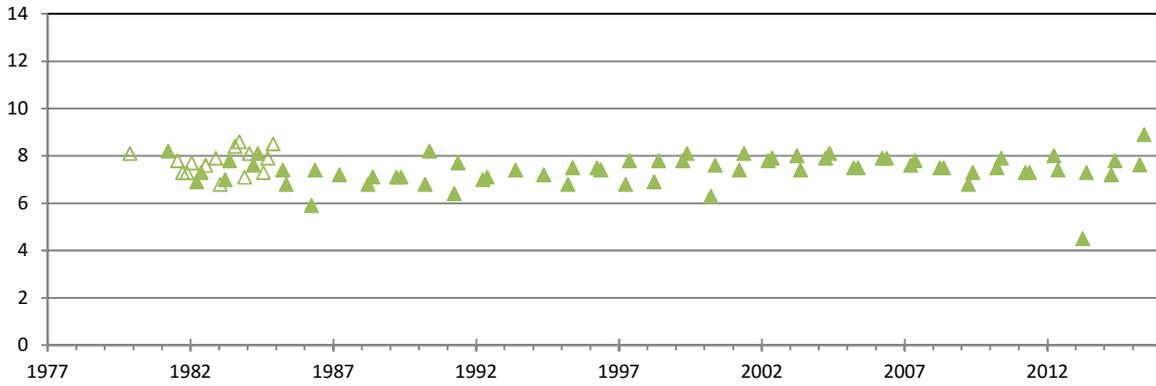
Mettler is in the Albany District of the South Coast DPaW Region

## MOATES (with Depth axis 0-6m)

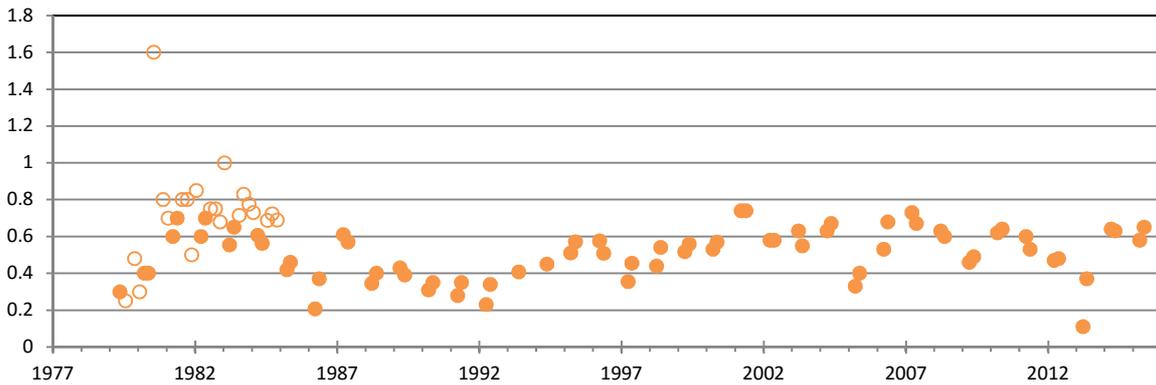
Depth (mLD)



pH



Salinity (ppt)



### Notes:

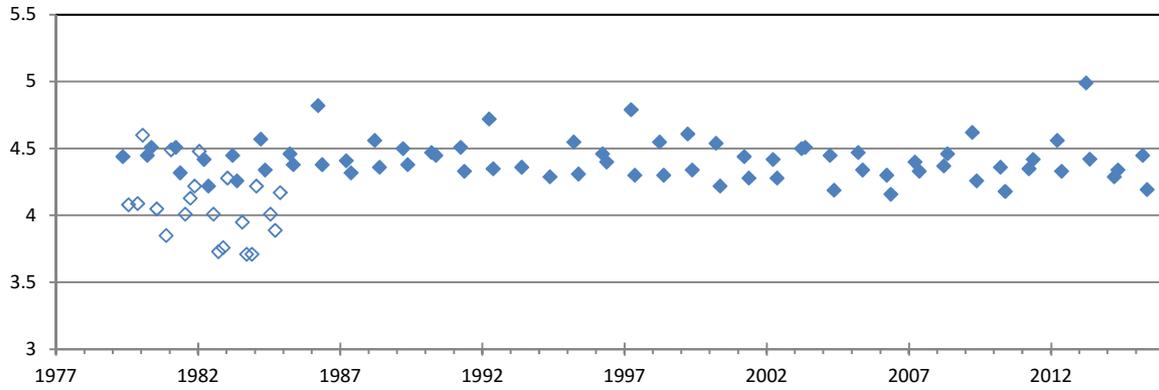
1. Year labels are positioned at 1<sup>st</sup> July each year.
2. Data are from Sept and Nov (filled symbols) and Jan, Mar, May & July (empty symbols) routine monitoring periods only.

Moates is a component of the 'Moates Lake System', which is listed in the 'Directory of Important Wetlands in Australia'.

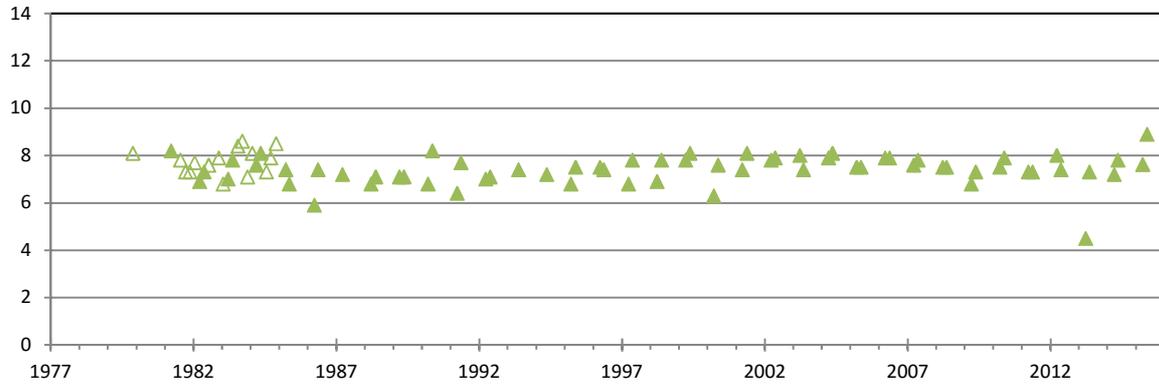
Moates is in the Albany District of the South Coast DPaW Region

## MOATES (with Depth axis 4-6m)

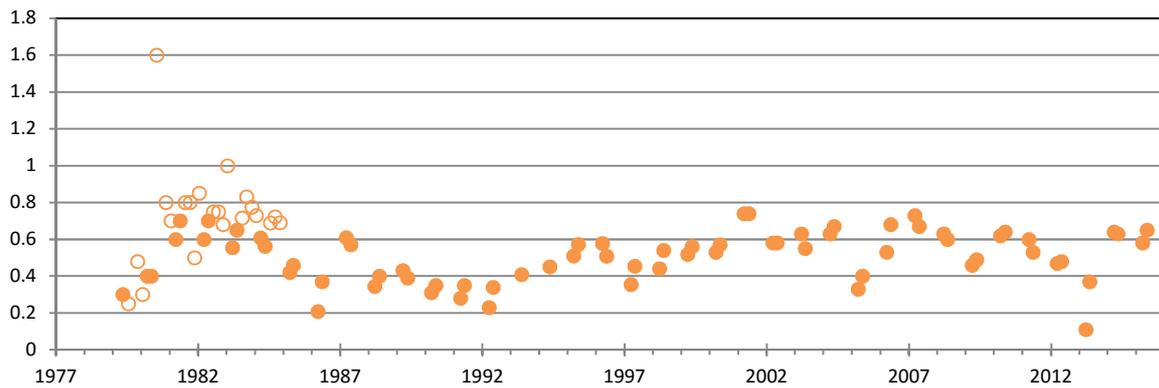
Depth (mLD)



pH



Salinity (ppt)



**Notes:**

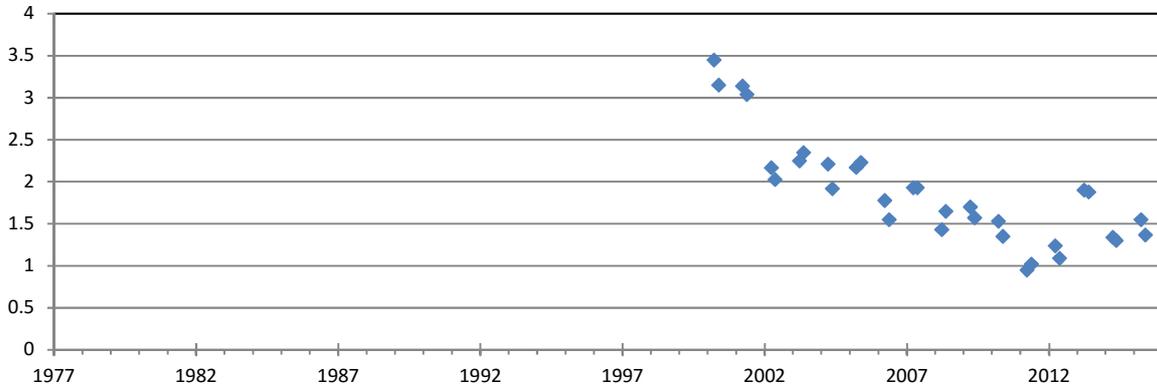
1. Year labels are positioned at 1<sup>st</sup> July each year.
2. Data are from Sept and Nov (filled symbols) and Jan, Mar, May & July (empty symbols) routine monitoring periods only.

Moates is a component of the 'Moates Lake System', which is listed in the 'Directory of Important Wetlands in Australia'.

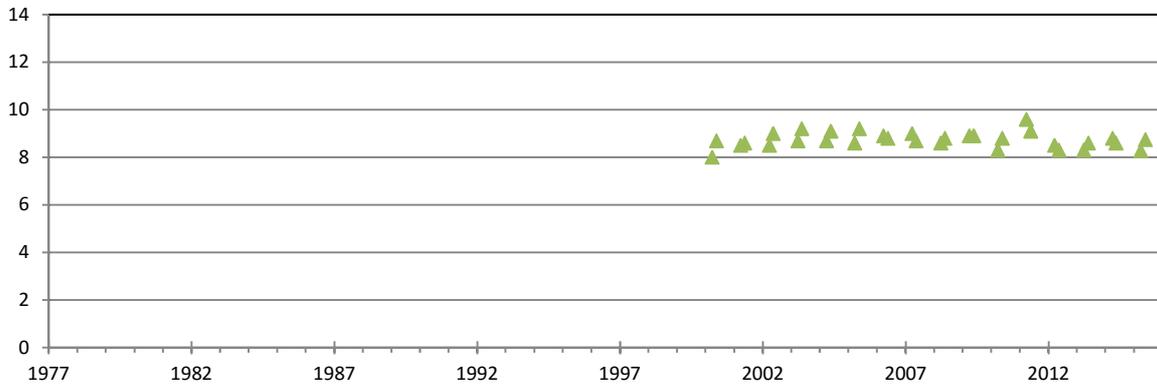
Moates is in the Albany District of the South Coast DPaW Region

# MORTIJINUP

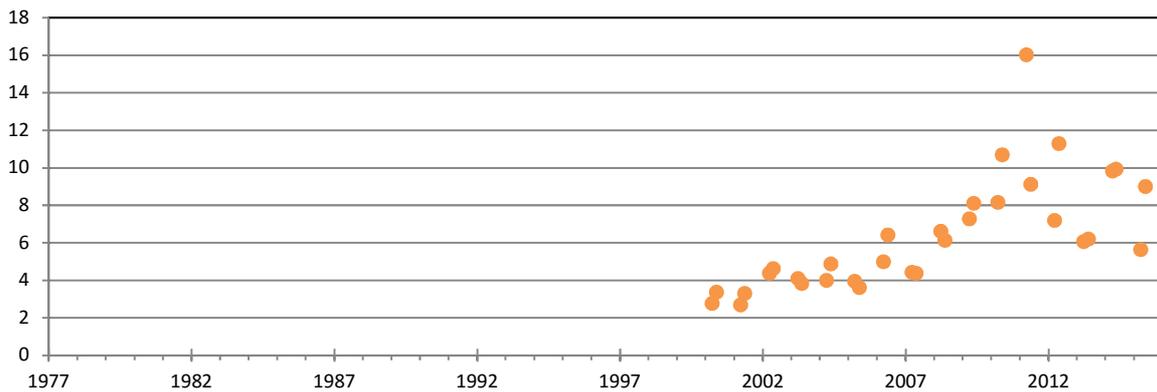
Depth (mLD)



pH



Salinity (ppt)



**Notes:**

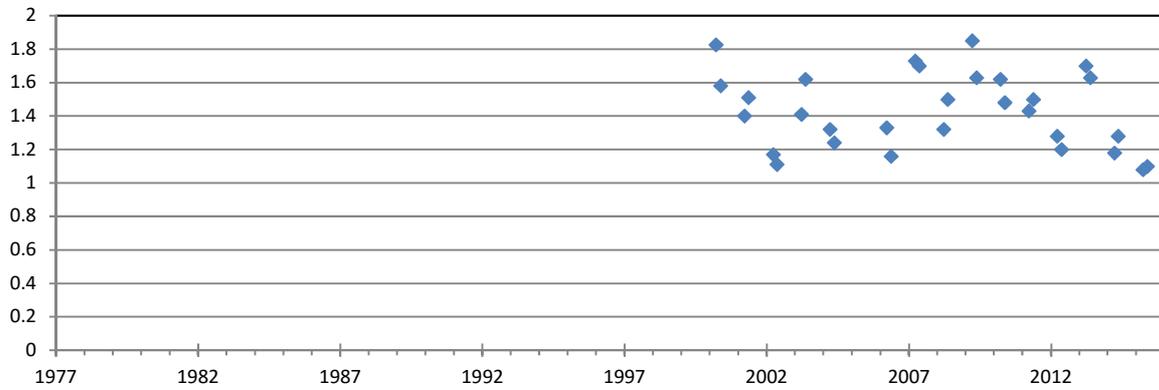
1. Year labels are positioned at 1<sup>st</sup> July each year.
2. Data are from September and November routine monitoring periods only.

Mortijinup is a component of the 'Mortijinup Lake System', which is listed in the 'Directory of Important Wetlands in Australia'.

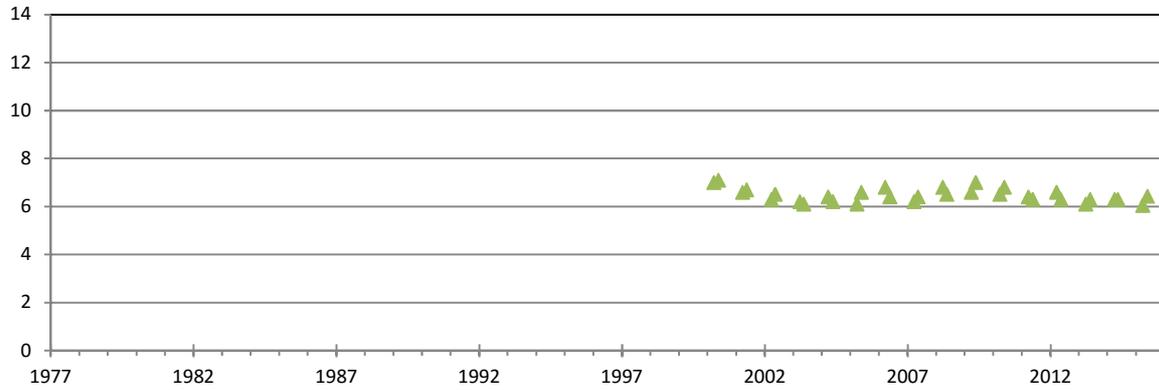
Mortijinup is in the Esperance District of the South Coast DPaW Region.

## MOUNT LE GRAND

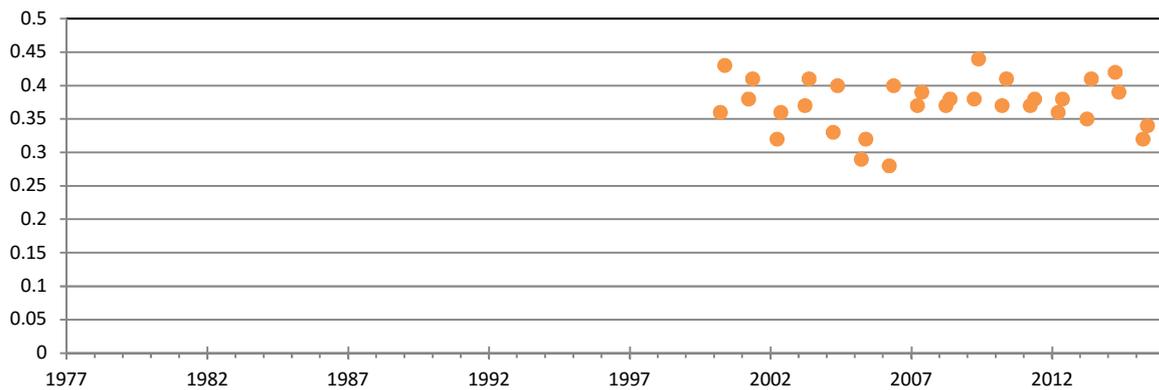
Depth (mLD)



pH



Salinity (ppt)



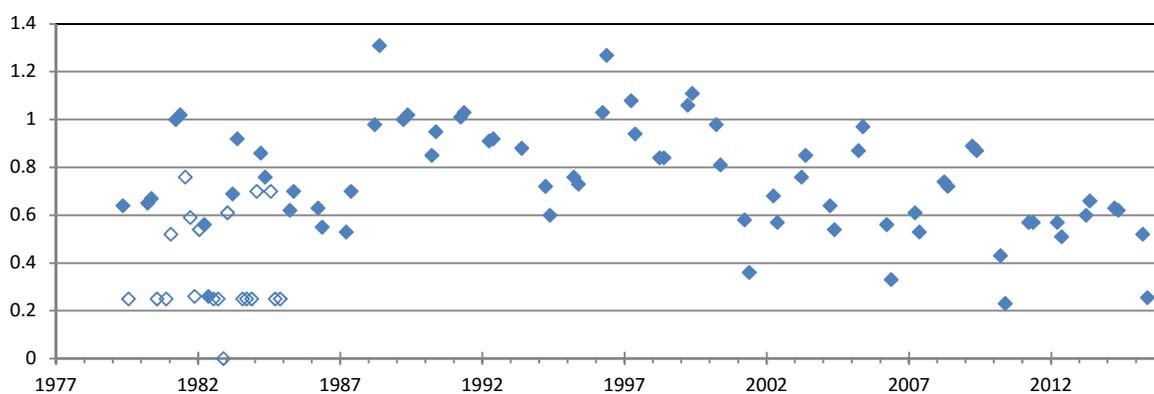
**Notes:**

1. Year labels are positioned at 1<sup>st</sup> July each year.
2. Data are from September and November routine monitoring periods only.

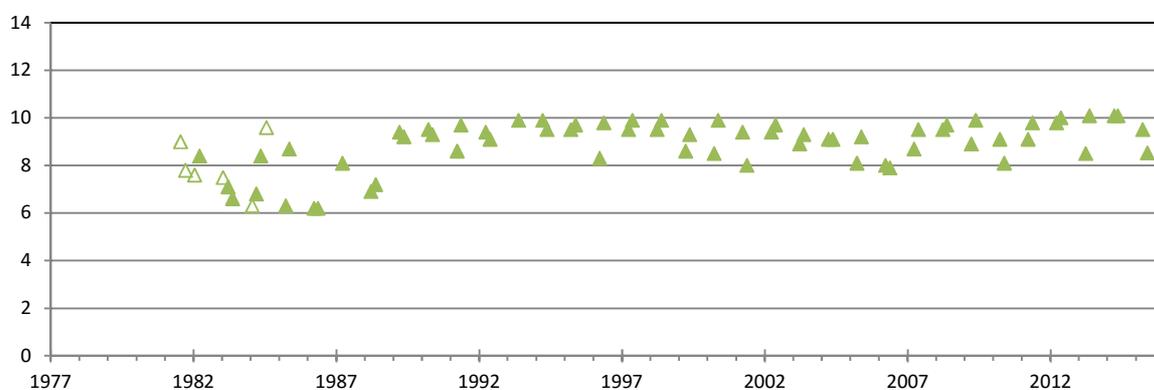
Mount Le Grand is in the Esperance District of the South Coast DPaW Region.

## MUIR

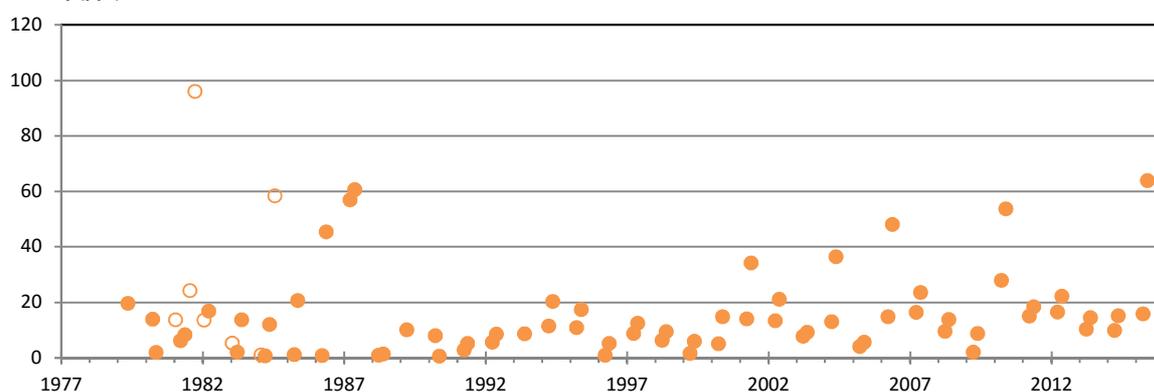
Depth (mLD)



pH



Salinity (ppt)



**Notes:**

1. Year labels are positioned at 1<sup>st</sup> July each year.
2. Data are from Sept and Nov (filled symbols) and Jan, Mar, May & July (empty symbols) routine monitoring periods only.

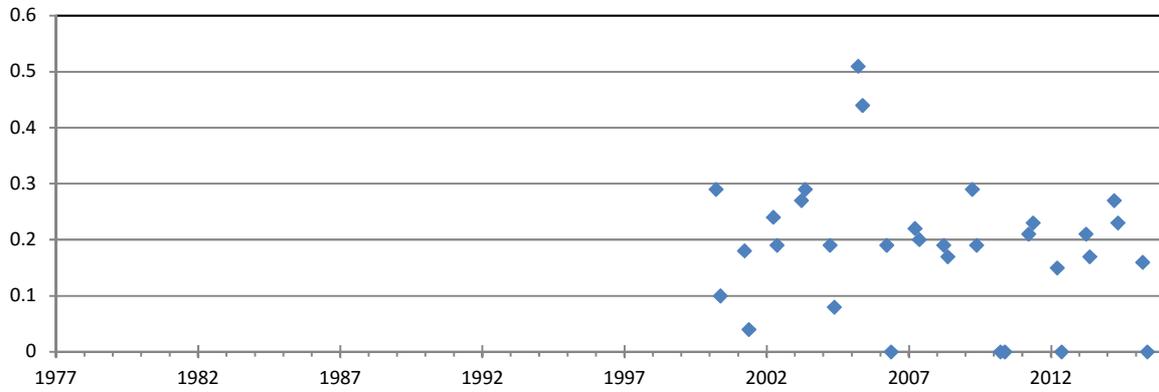
Lake Muir is a component of the 'Muir-Byenup System', which is listed as a Wetland of International Importance under the 'Ramsar' Convention on Wetlands.

Lake Muir is also listed in the 'Directory of Important Wetlands in Australia'.

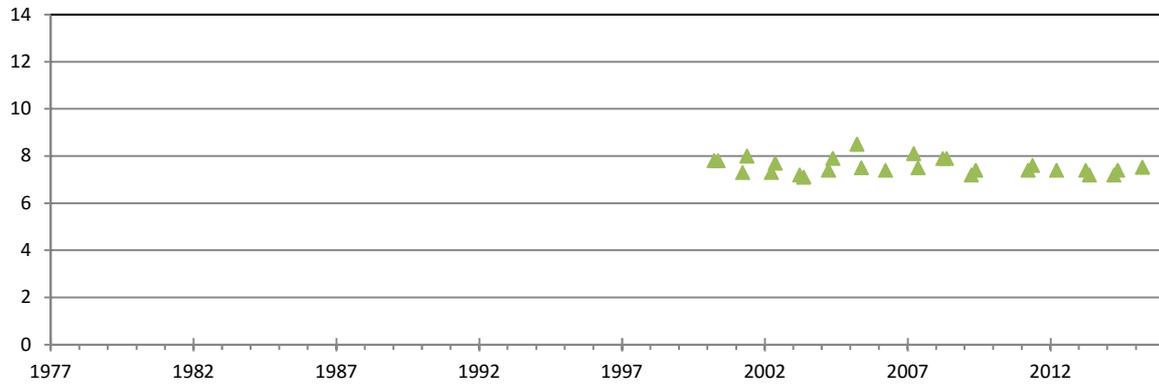
Muir is within the former Muir-Unicup Natural Diversity Recovery Catchment and is in the Donnelly District (headquartered in Pemberton) of the Warren DPaW Region.

# NGOPITCHUP

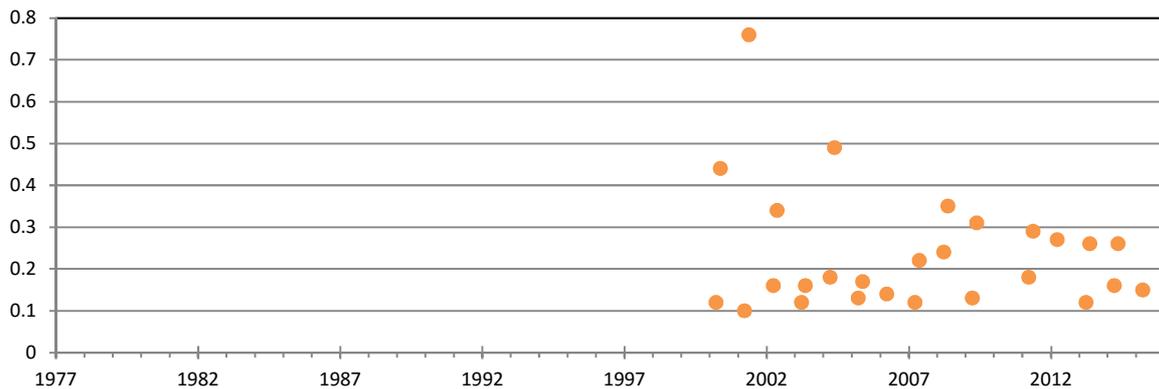
**Depth (mLD)**



**pH**



**Salinity (ppt)**



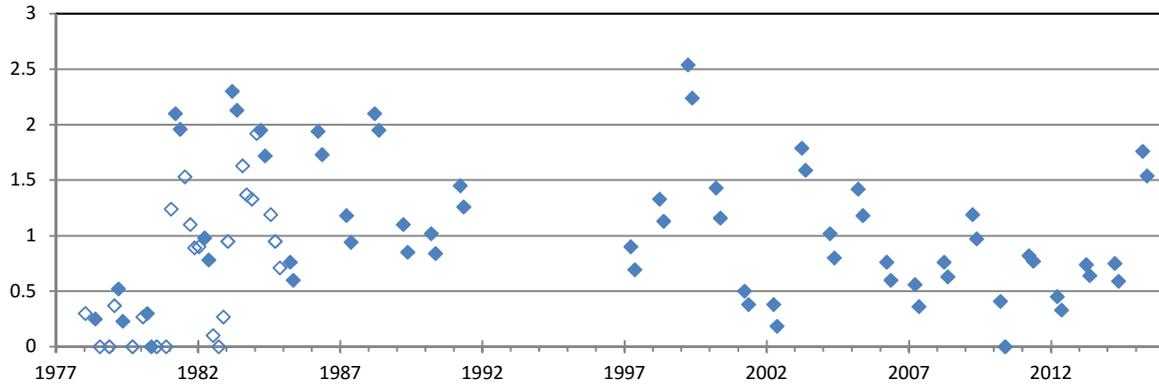
**Notes:**

1. Year labels are positioned at 1<sup>st</sup> July each year.
2. Data are from September and November routine monitoring periods only.

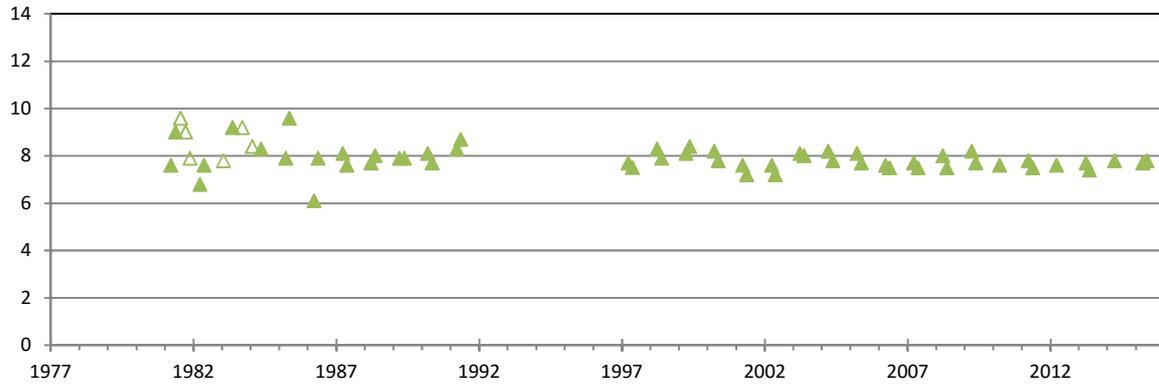
Ngopitchup is in the Southern Wheatbelt geographical area (headquartered in Narrogin) of the Wheatbelt DPaW Region.

# NINAN

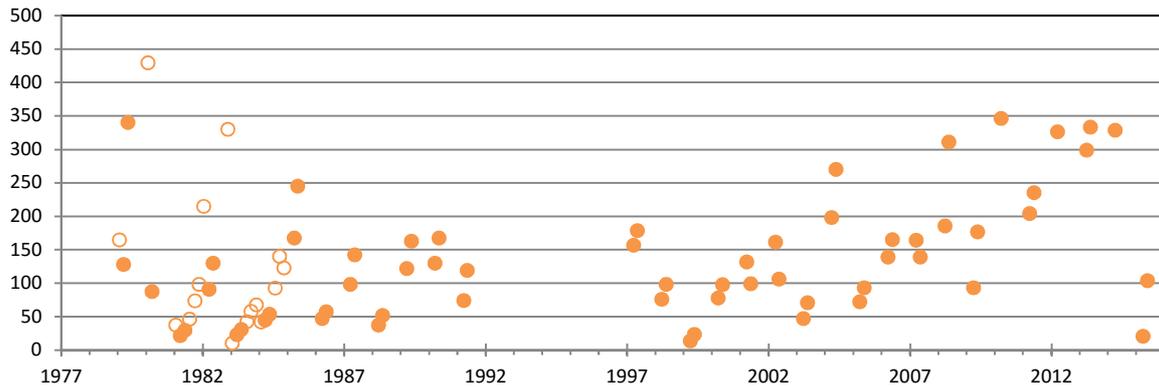
Depth (mLD)



pH



Salinity (ppt)



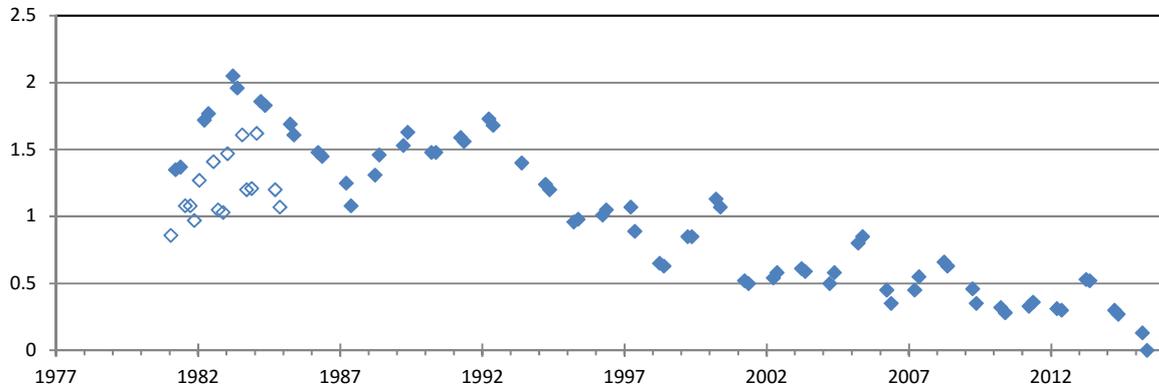
**Notes:**

1. Year labels are positioned at 1<sup>st</sup> July each year.
2. Data are from Sept and Nov (filled symbols) and Jan, Mar, May & July (empty symbols) routine monitoring periods only.

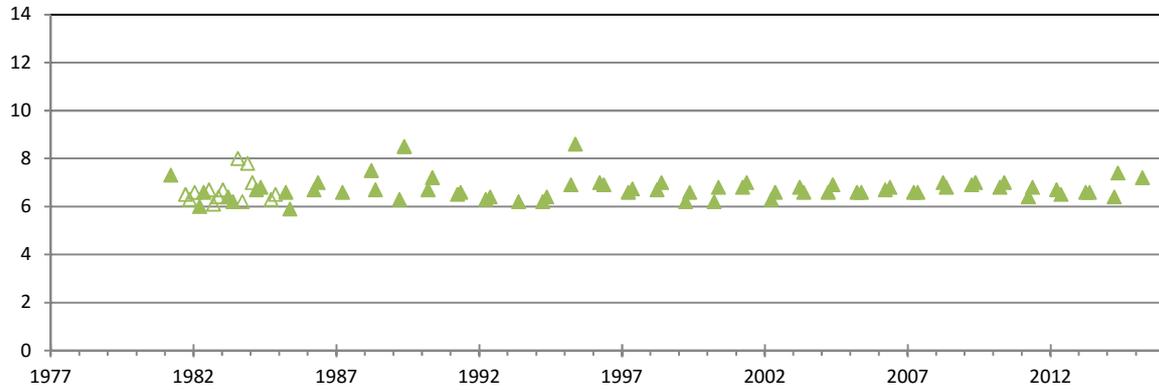
Ninan is in the Central District (headquartered in Merredin) of the Wheatbelt DPaW Region.

## NINE MILE

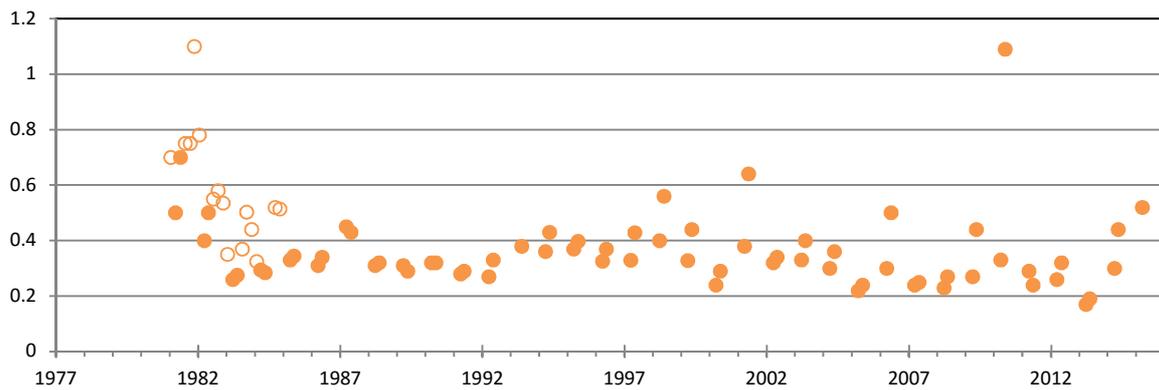
Depth (mLD)



pH



Salinity (ppt)



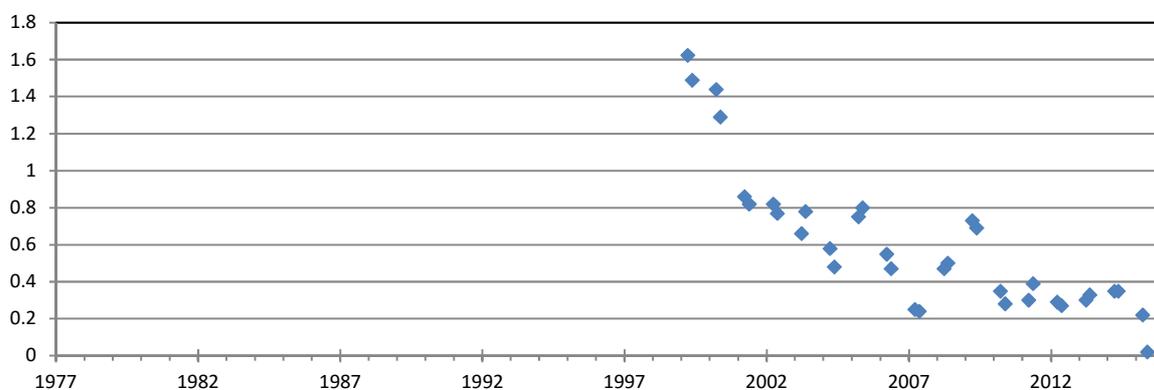
**Notes:**

1. Year labels are positioned at 1<sup>st</sup> July each year.
2. Data are from Sept and Nov (filled symbols) and Jan, Mar, May & July (empty symbols) routine monitoring periods only.

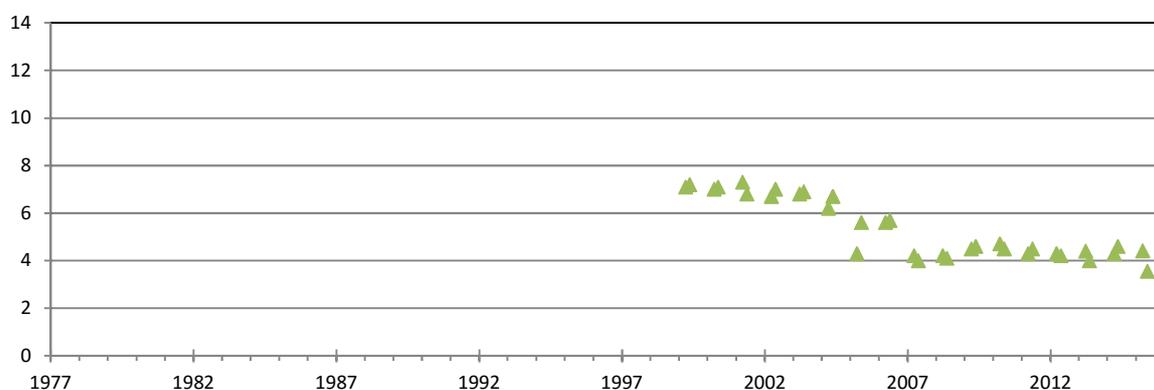
Nine Mile is in the Swan Coastal District (headquartered in Wanneroo) of the Swan DPaW Region.

## NOOBIJUP <sup>IM</sup>

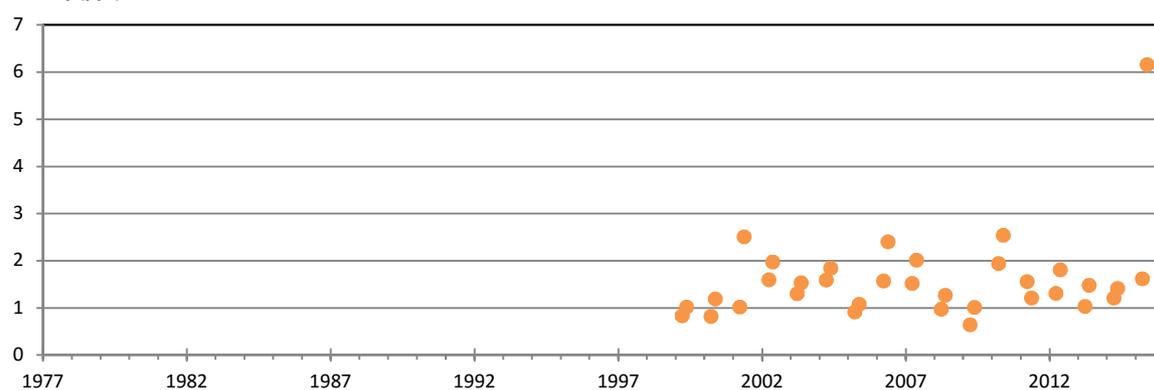
**Depth (mLD)**



**pH**



**Salinity (ppt)**



**Notes:**

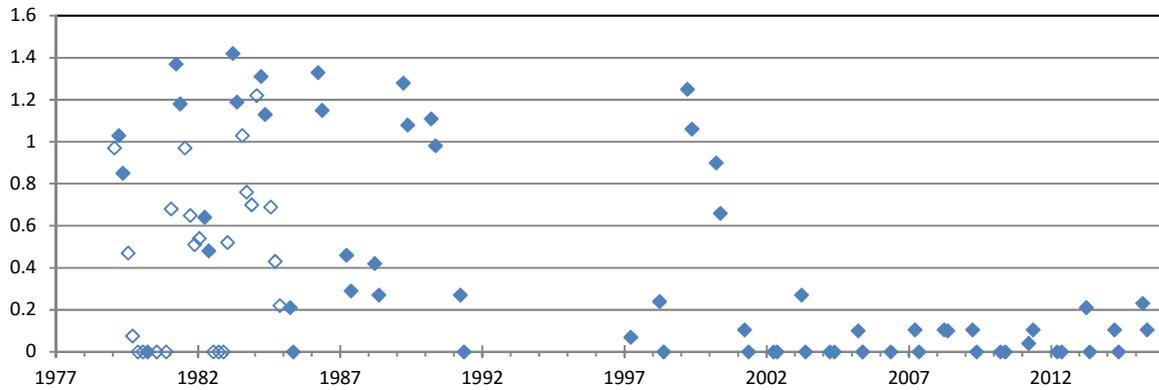
1. <sup>IM</sup> indicates this is one of 25 wetlands Intensively Monitored for additional biological and physico-chemical attributes.
2. Year labels are positioned at 1<sup>st</sup> July each year.
3. Data are from September and November routine monitoring periods only.

Noobijup is a component of the 'Byenup Lagoon System', which is listed in the 'Directory of Important Wetlands in Australia'.

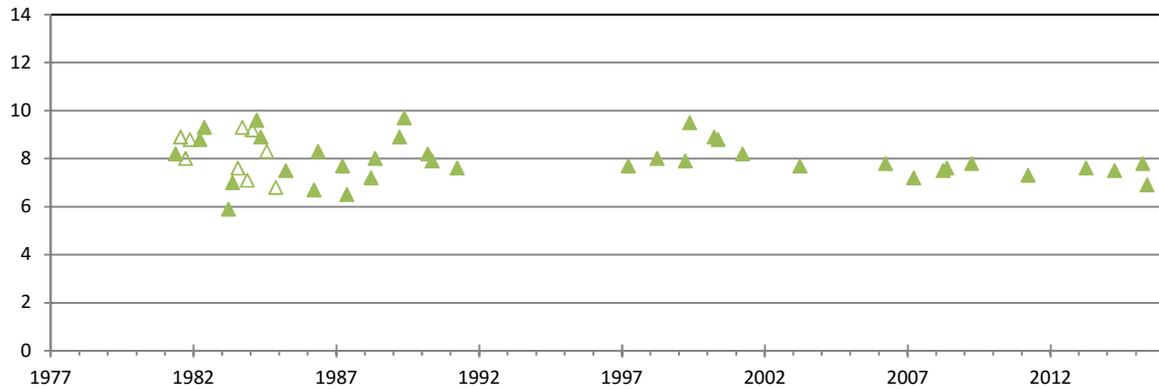
Noobijup is within the former Muir-Unicup Natural Diversity Recovery Catchment and is in the Donnelly District (headquartered in Pemberton) of the Warren DPaW Region.

## NOONYING

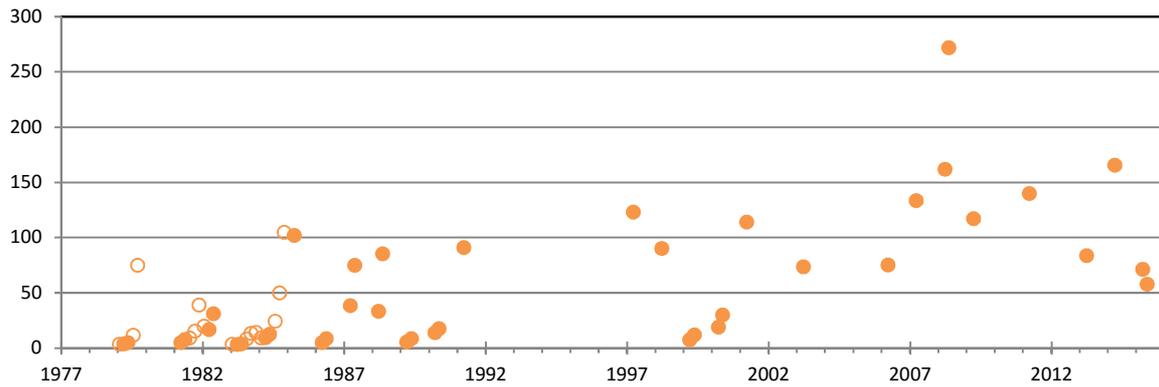
Depth (mLD)



pH



Salinity (ppt)



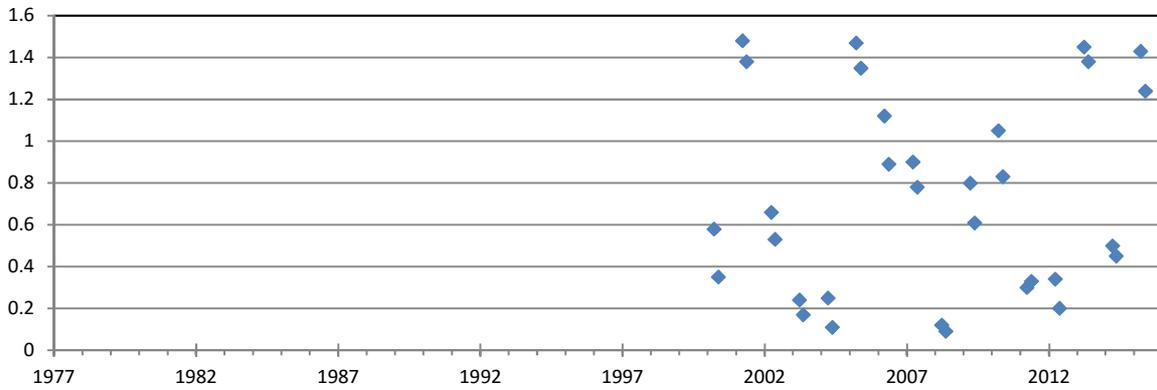
**Notes:**

1. Year labels are positioned at 1<sup>st</sup> July each year.
2. Data are from Sept and Nov (filled symbols) and Jan, Mar, May & July (empty symbols) routine monitoring periods only.

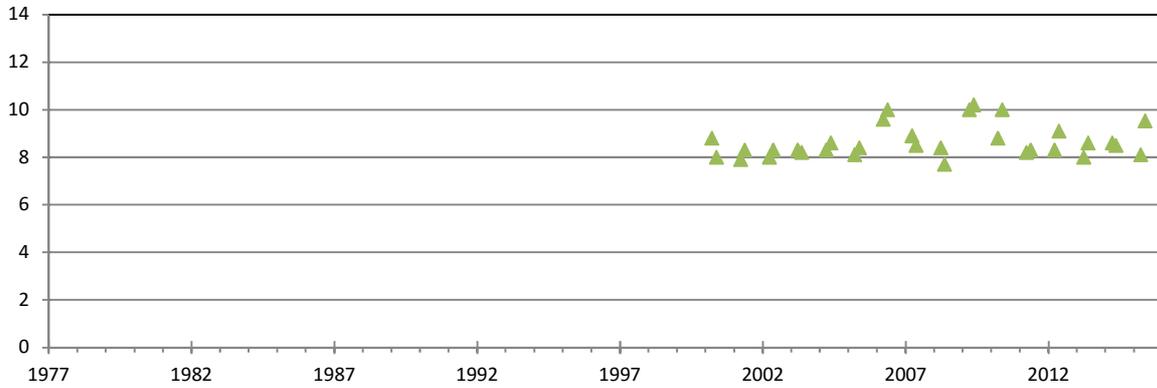
Noonying is in the Central District (headquartered in Merredin) of the Wheatbelt DPaW Region.

## NORTH PARRIUP

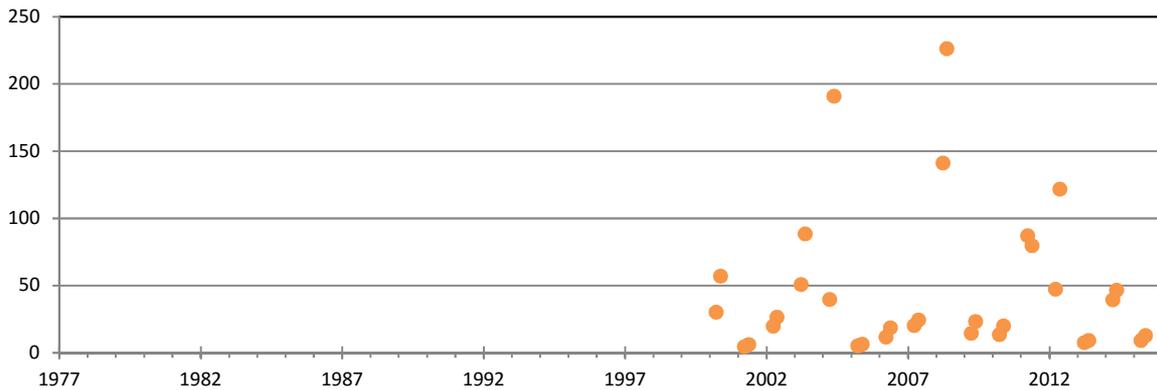
**Depth (mLD)**



**pH**



**Salinity (ppt)**



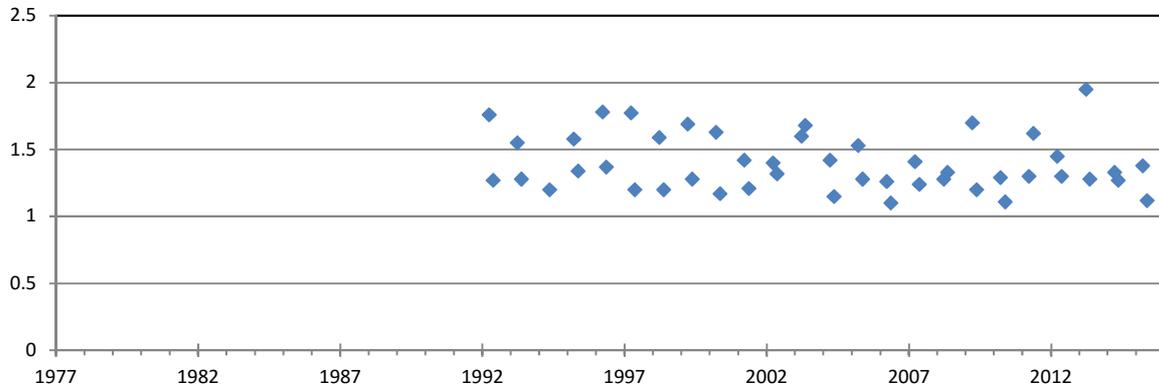
**Notes:**

1. Year labels are positioned at 1<sup>st</sup> July each year.
2. Data are from September and November routine monitoring periods only.

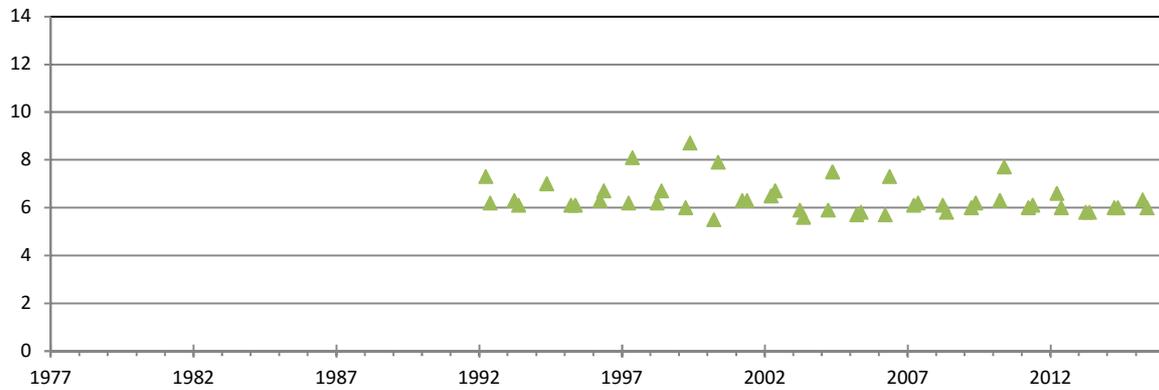
North Parriup is in the Esperance District of the South Coast DPaW Region.

# OWINGUP

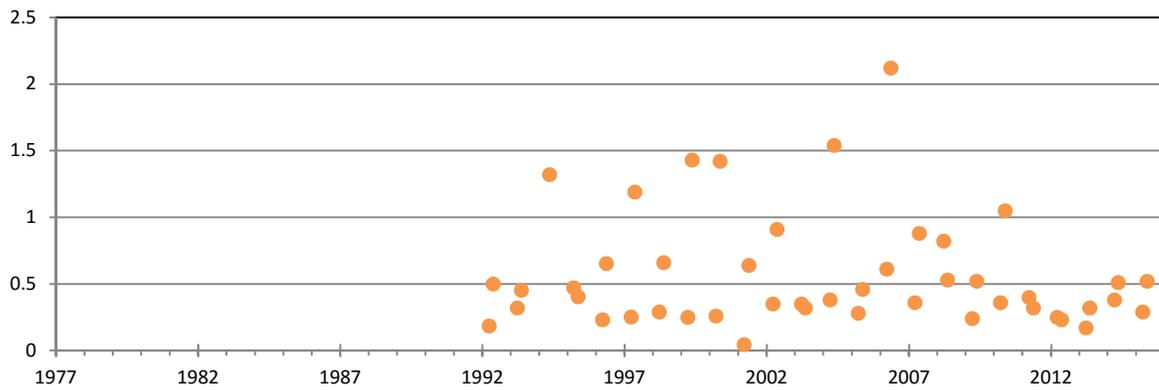
Depth (mLD)



pH



Salinity (ppt)



**Notes:**

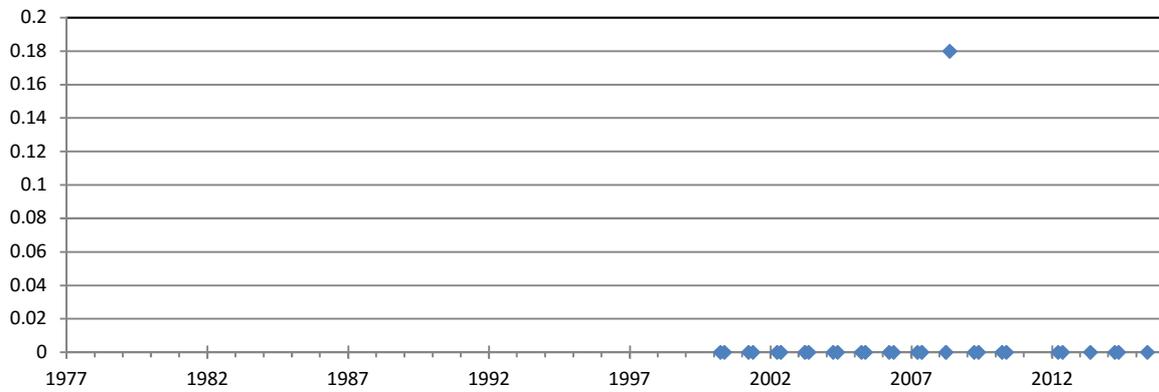
1. Year labels are positioned at 1<sup>st</sup> July each year.
2. Data are from September and November routine monitoring periods only.

Owingup is a component of the 'Owingup Swamp System', which is listed in the 'Directory of Important Wetlands in Australia'.

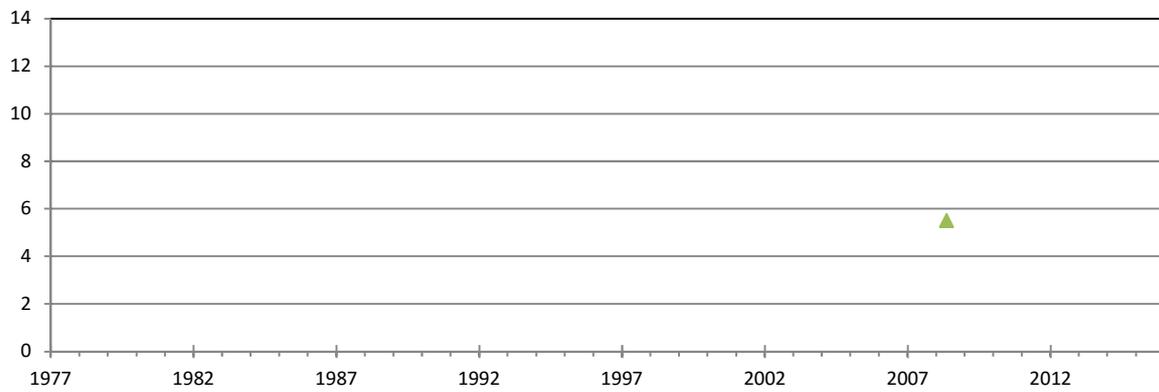
Owingup is in the Frankland District (headquartered in Walpole) of the Warren DPaW Region.

## PABELUP SOUTH

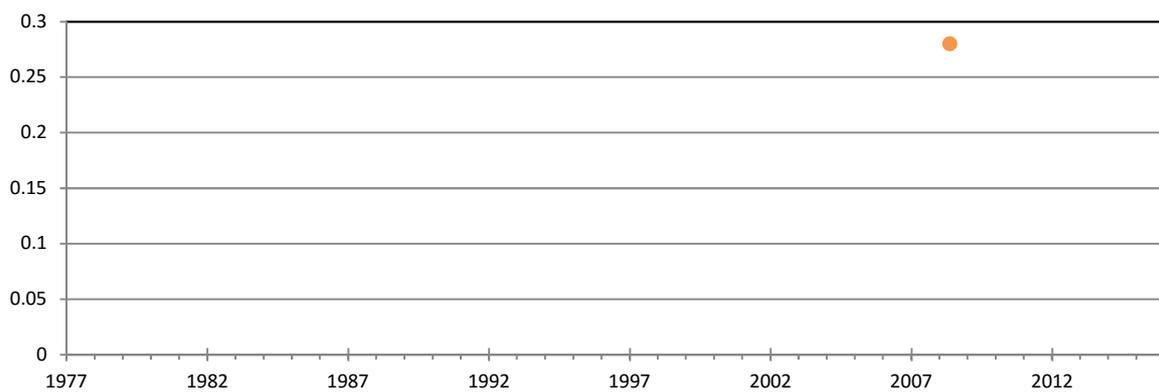
Depth (mLD)



pH



Salinity (ppt)



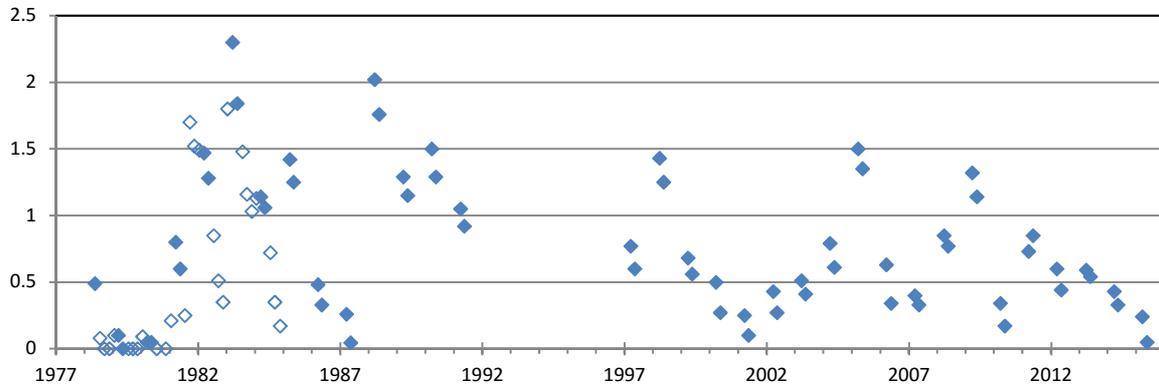
**Notes:**

1. Year labels are positioned at 1<sup>st</sup> July each year.
2. Data are from September and November routine monitoring periods only.

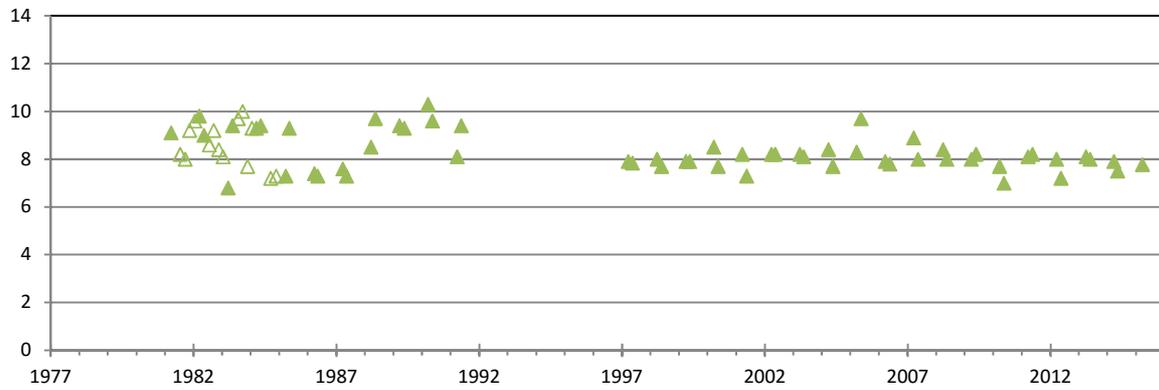
Pabelup South is in the Albany District of the South Coast DPaW Region

## PARKEYERRING<sup>IM</sup>

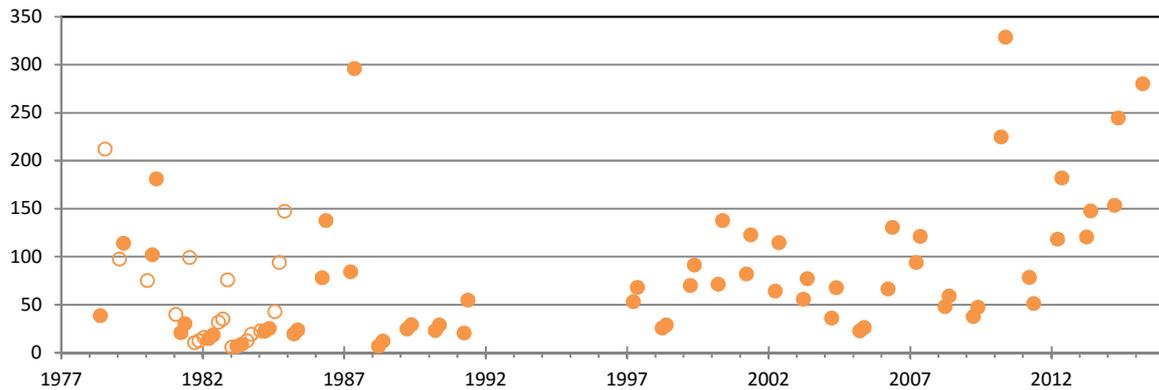
Depth (mLD)



pH



Salinity (ppt)



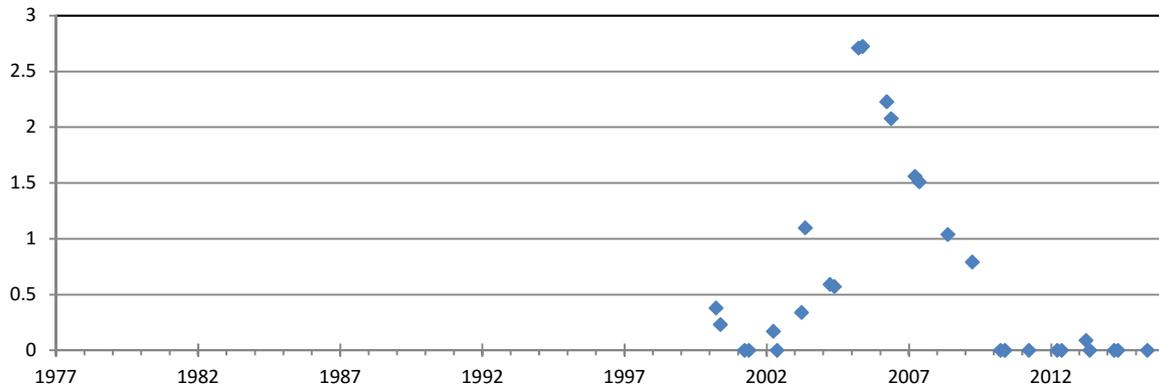
### Notes:

1. <sup>IM</sup> indicates this is one of 25 wetlands Intensively Monitored for additional biological and physico-chemical attributes.
2. Year labels are positioned at 1<sup>st</sup> July each year.
3. Data are from Sept and Nov (filled symbols) and Jan, Mar, May & July (empty symbols) routine monitoring periods only.

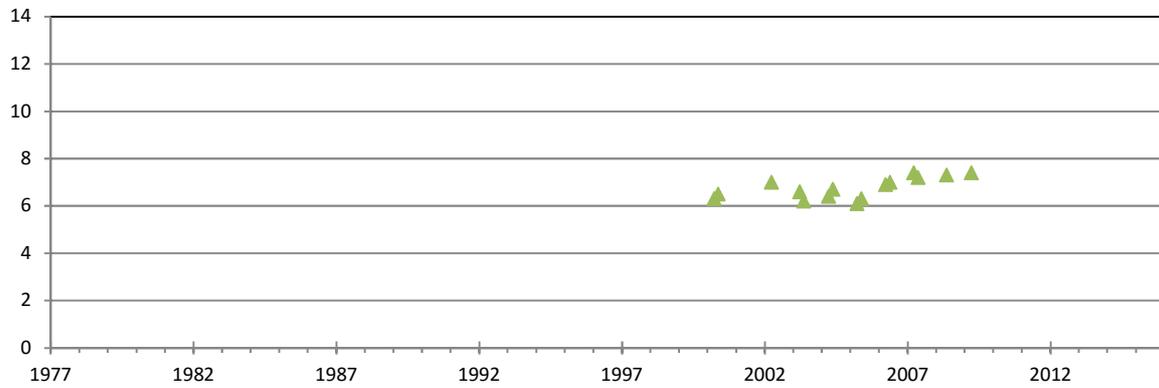
Parkeyerring is in the Southern Wheatbelt geographical area (headquartered in Narrogin) of the Wheatbelt DPAW Region.

# PILLENORUP

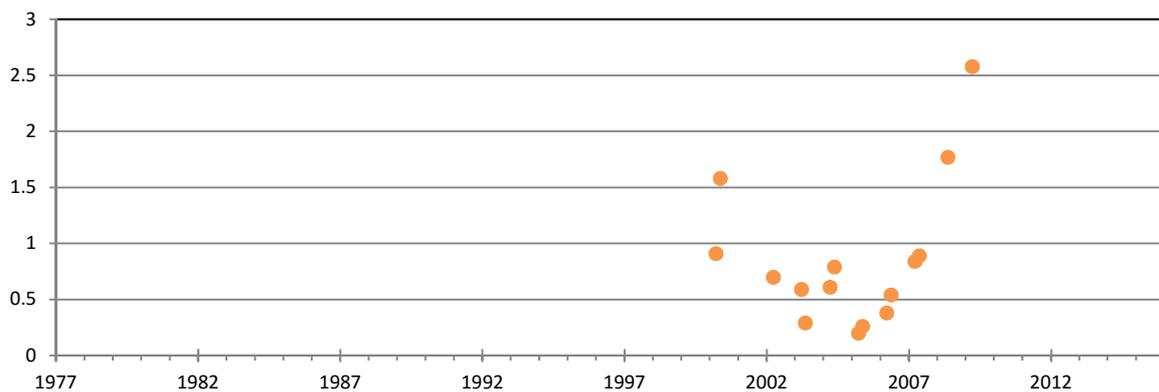
Depth (mLD)



pH



Salinity (ppt)



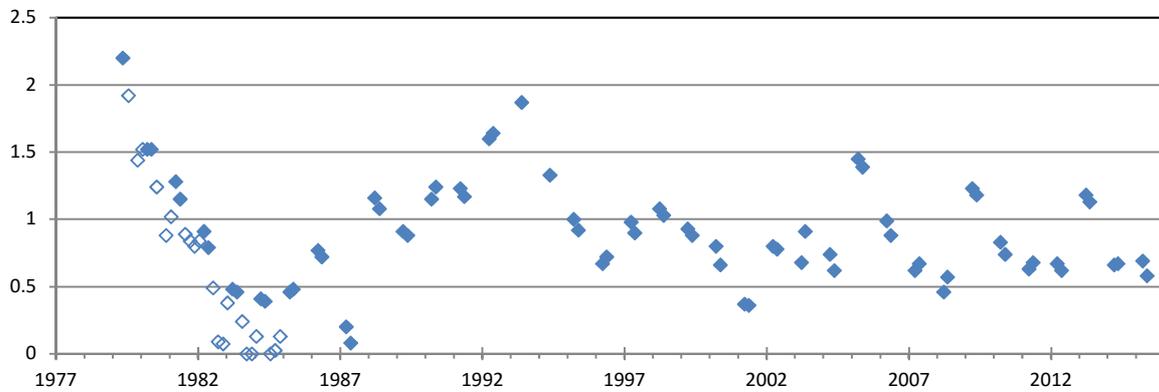
**Notes:**

1. Year labels are positioned at 1<sup>st</sup> July each year.
2. Data are from September and November routine monitoring periods only.

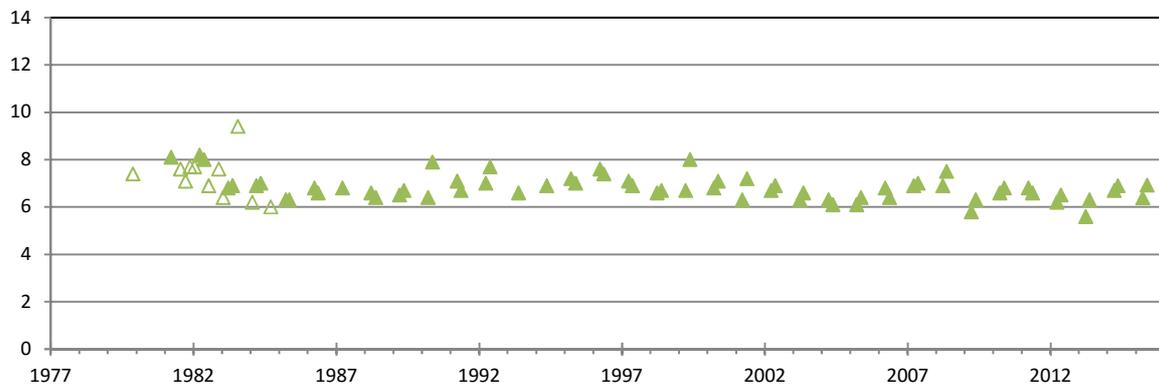
Pillenorup is in the Albany District of the South Coast DPaW Region

## PLEASANT VIEW <sup>IM</sup>

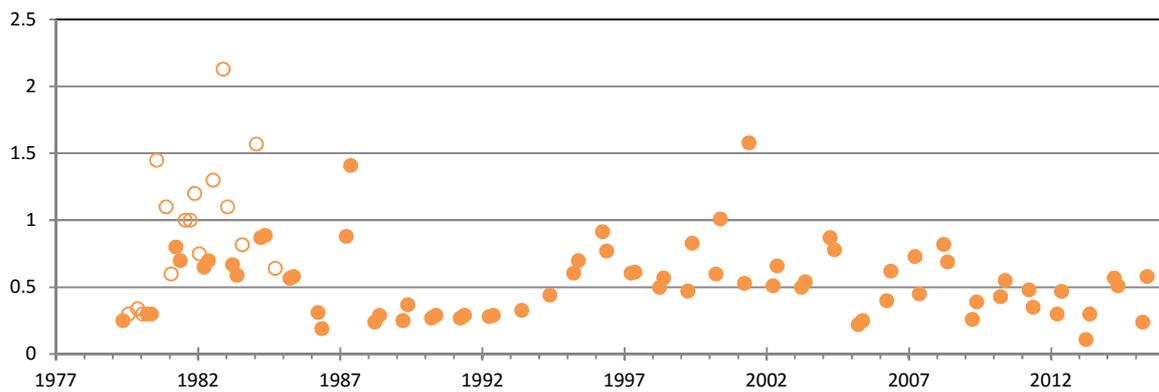
**Depth (mLD)**



**pH**



**Salinity (ppt)**



**Notes:**

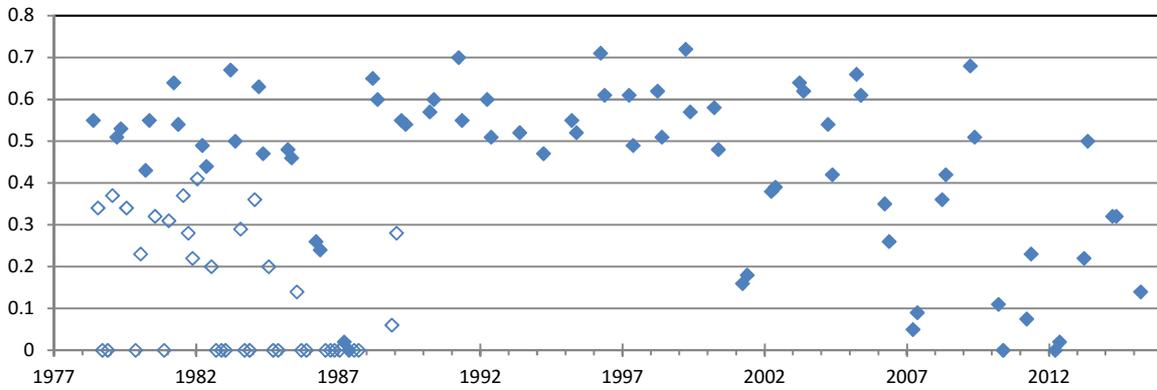
1. <sup>IM</sup> indicates this is one of 25 wetlands Intensively Monitored for additional biological and physico-chemical attributes.
2. Year labels are positioned at 1<sup>st</sup> July each year.
3. Data are from Sept and Nov (filled symbols) and Jan, Mar, May & July (empty symbols) routine monitoring periods only.

Pleasant View is a component of the 'Lake Pleasant View System', which is listed in the 'Directory of Important Wetlands in Australia'.

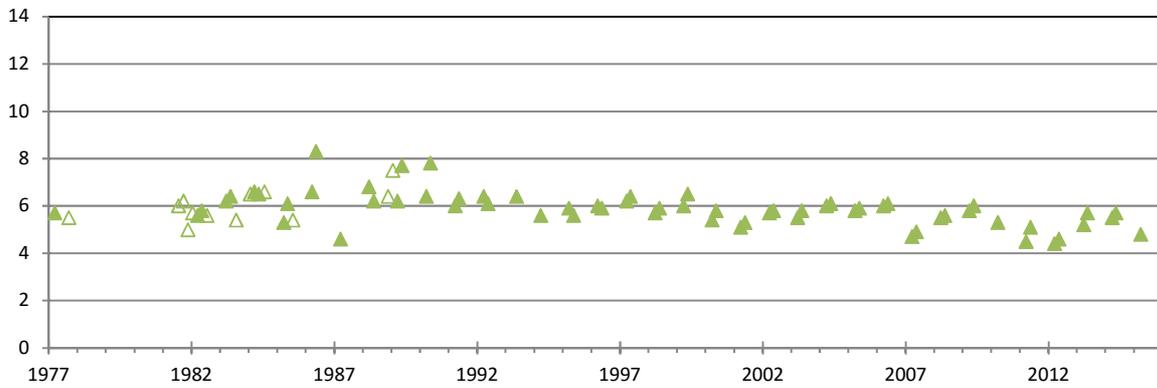
Pleasant View is in the Albany District of the South Coast DPaW Region

## POORGINUP

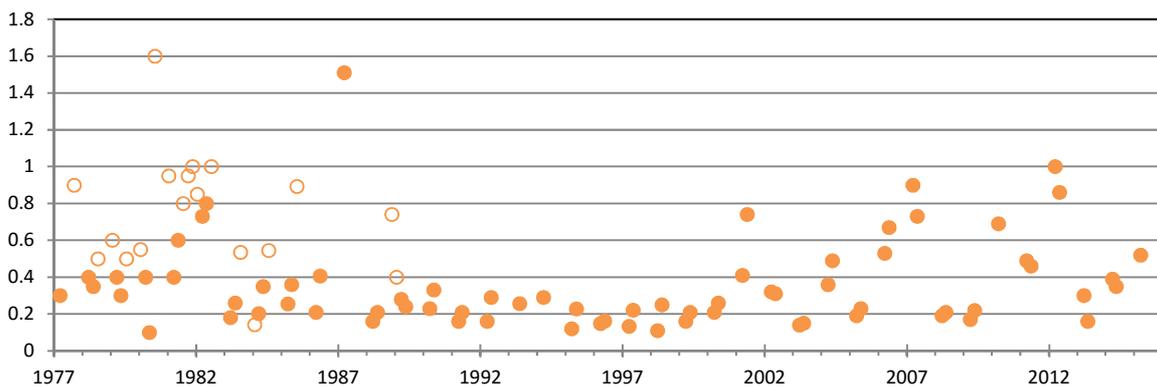
**Depth (mLD)**



**pH**



**Salinity (ppt)**



**Notes:**

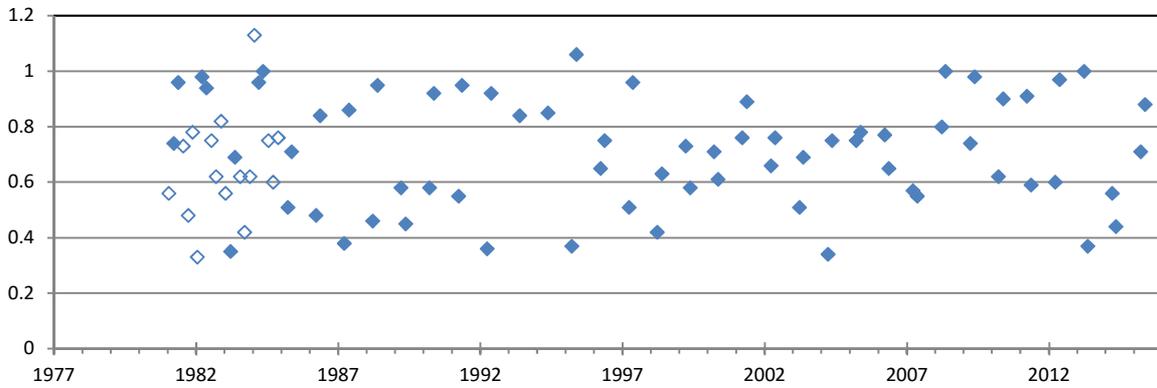
1. Year labels are positioned at 1<sup>st</sup> July each year.
2. Data are from Sept and Nov (filled symbols) and Jan, Mar, May & July (empty symbols) routine monitoring periods only.

Poorginup is a component of the 'Muir-Byenup System', which is listed as a Wetland of International Importance under the 'Ramsar' Convention on Wetlands, and is also a component of the 'Byenup Lagoon System', which is listed in the 'Directory of Important Wetlands in Australia'.

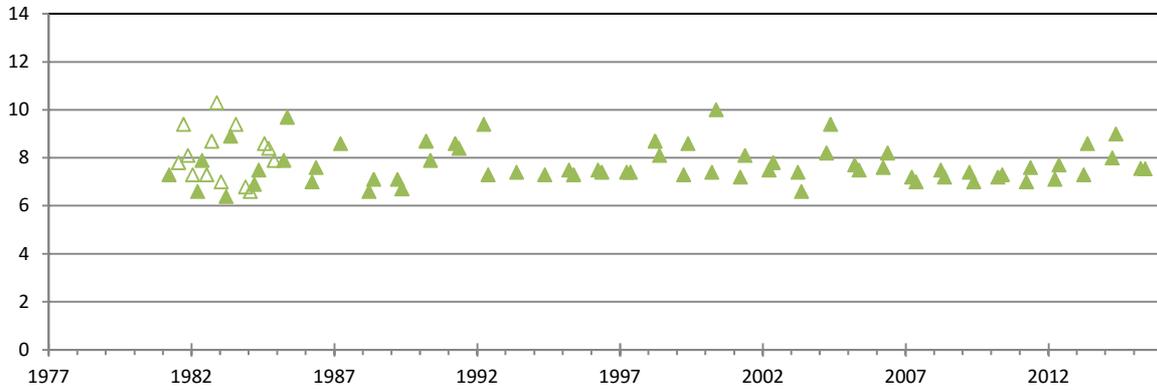
Poorginup is within the former Muir-Unicup Natural Diversity Recovery Catchment and is in the Donnelly District (headquartered in Pemberton) of the Warren DPaW Region.

# POWELL

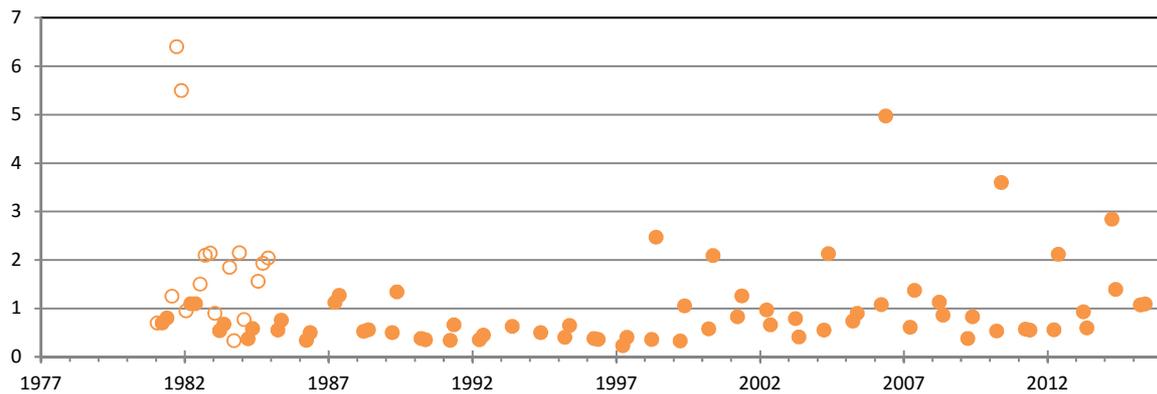
Depth (mLD)



pH



Salinity (ppt)



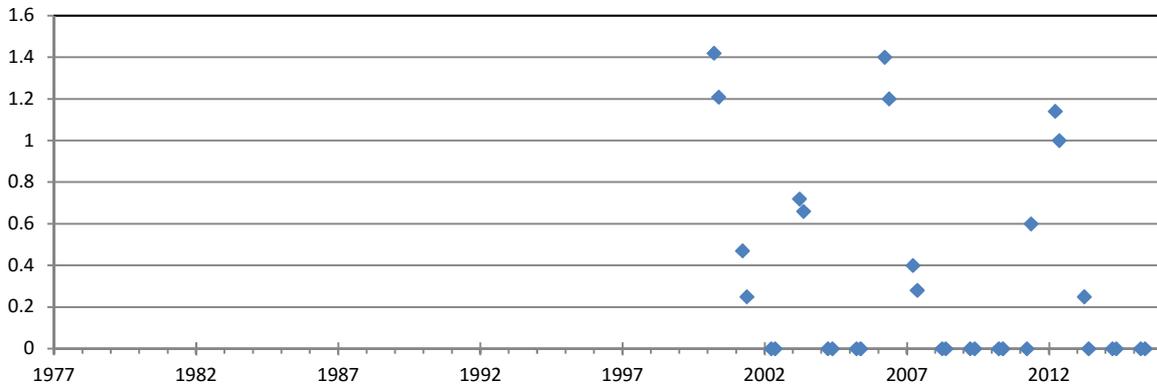
**Notes:**

1. Year labels are positioned at 1<sup>st</sup> July each year.
2. Data are from Sept and Nov (filled symbols) and Jan, Mar, May & July (empty symbols) routine monitoring periods only.

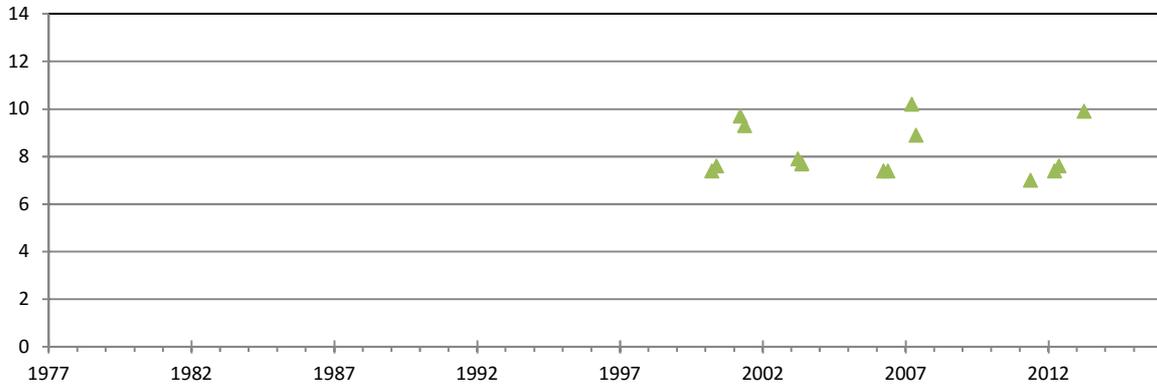
Powell is in the Albany District of the South Coast DPaW Region

## RANGE ROAD YATE

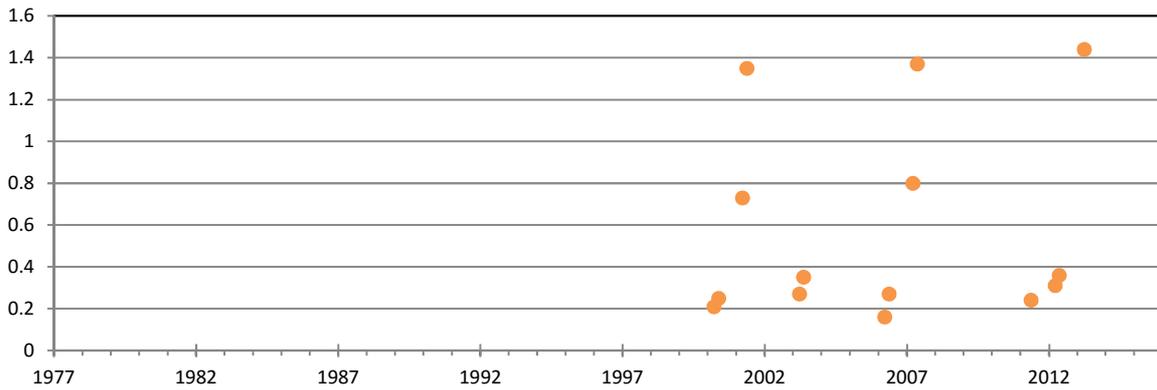
**Depth (mLD)**



**pH**



**Salinity (ppt)**



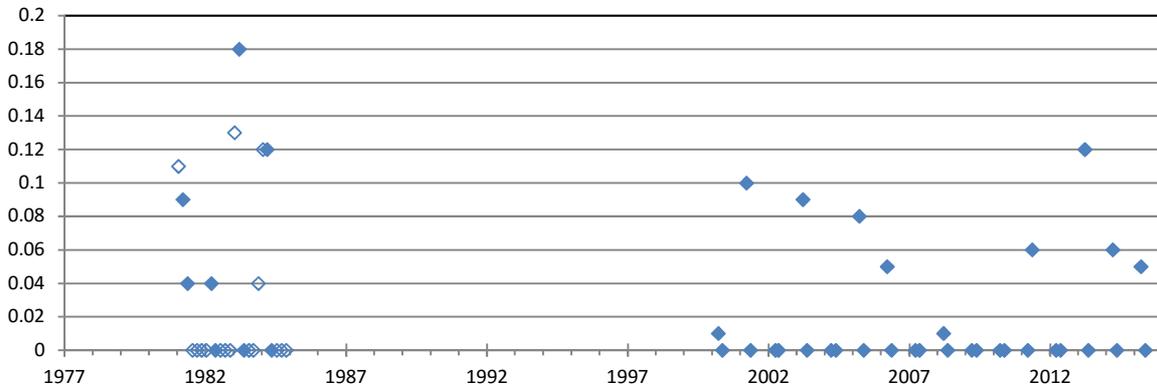
**Notes:**

1. Year labels are positioned at 1<sup>st</sup> July each year.
2. Data are from September and November routine monitoring periods only.

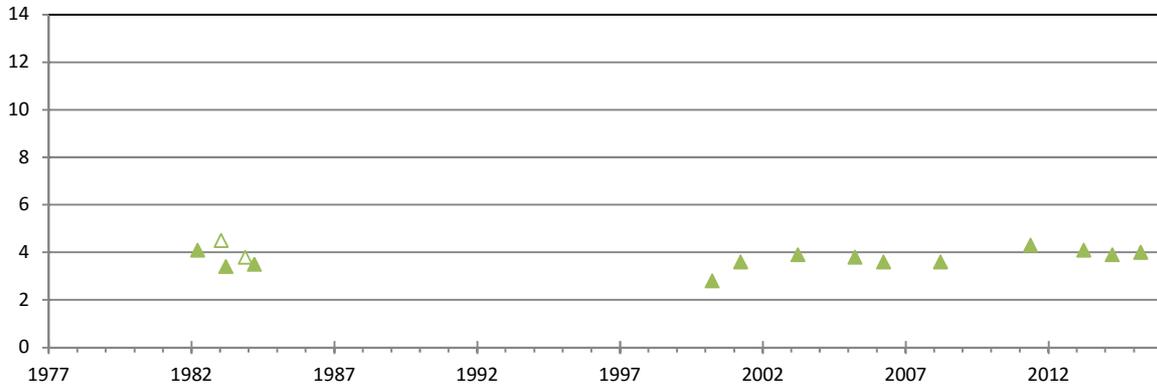
Range Road Yate is in the Southern Wheatbelt geographical area (headquartered in Narrogin) of the Wheatbelt DPaW Region.

## RED (BRUCE ROCK)

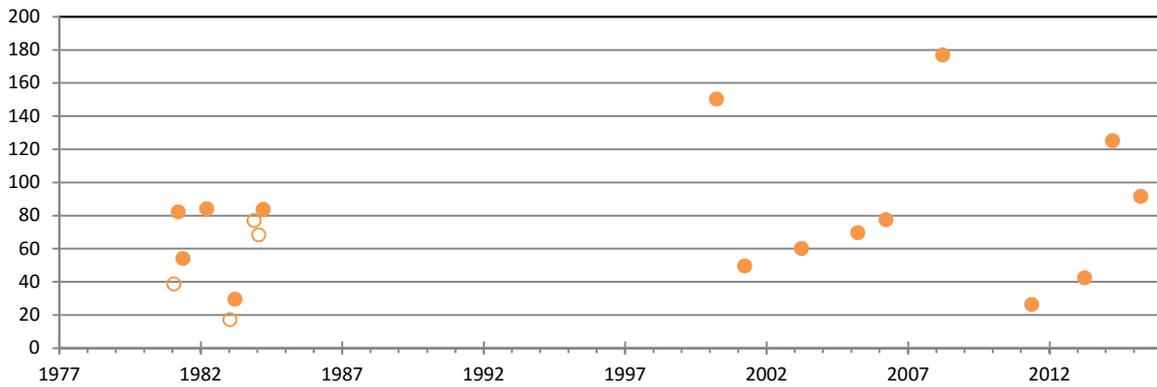
**Depth (mLD)**



**pH**



**Salinity (ppt)**



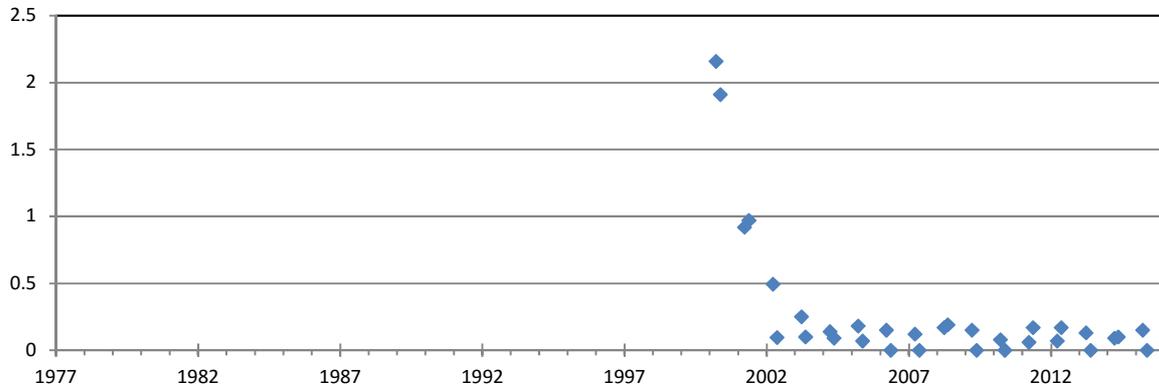
**Notes:**

1. Year labels are positioned at 1<sup>st</sup> July each year.
2. Data are from Sept and Nov (filled symbols) and Jan, Mar, May & July (empty symbols) routine monitoring periods only.

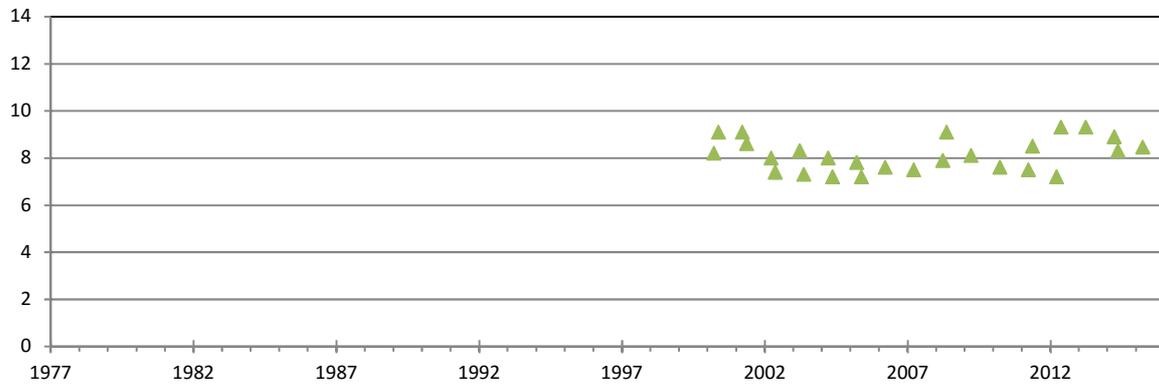
Red (Bruce Rock) is in the Central District (headquartered in Merredin) of the Wheatbelt DPaW Region.

## RONNERUP <sup>IM</sup>

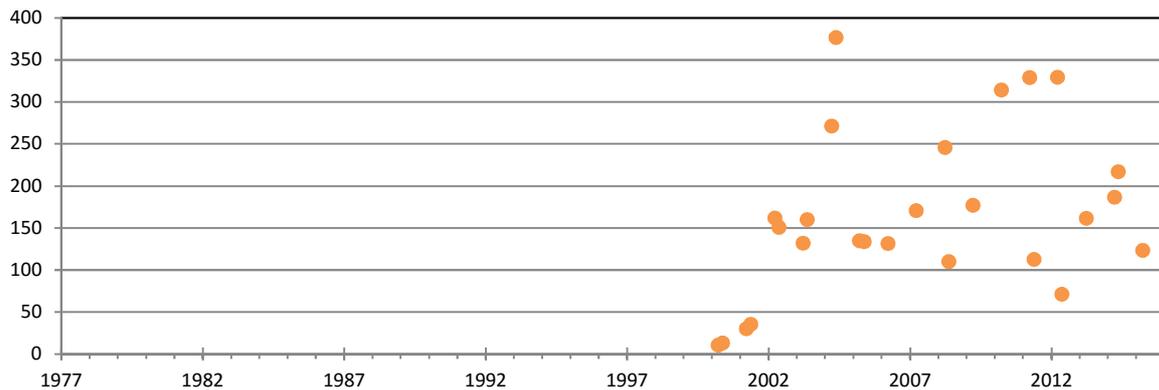
Depth (mLD)



pH



Salinity (ppt)



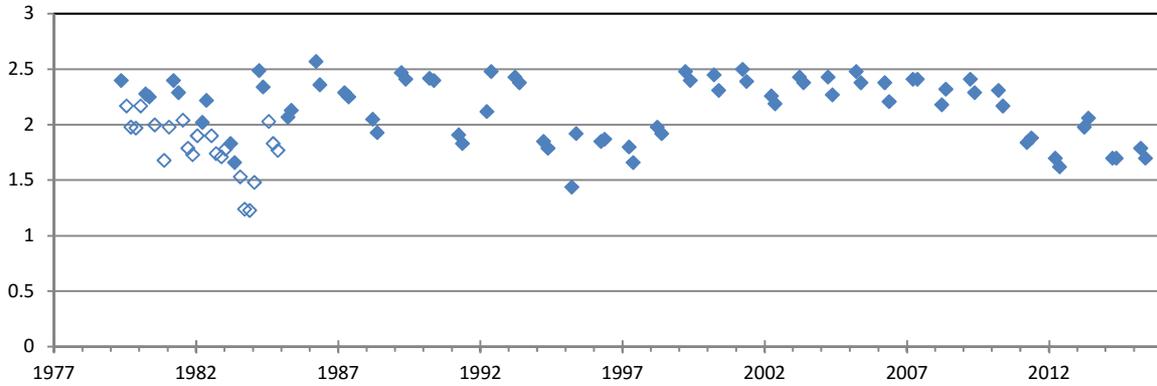
**Notes:**

1. <sup>IM</sup> indicates this is one of 25 wetlands Intensively Monitored for additional biological and physico-chemical attributes.
2. Year labels are positioned at 1<sup>st</sup> July each year.
3. Data are from September and November routine monitoring periods only.

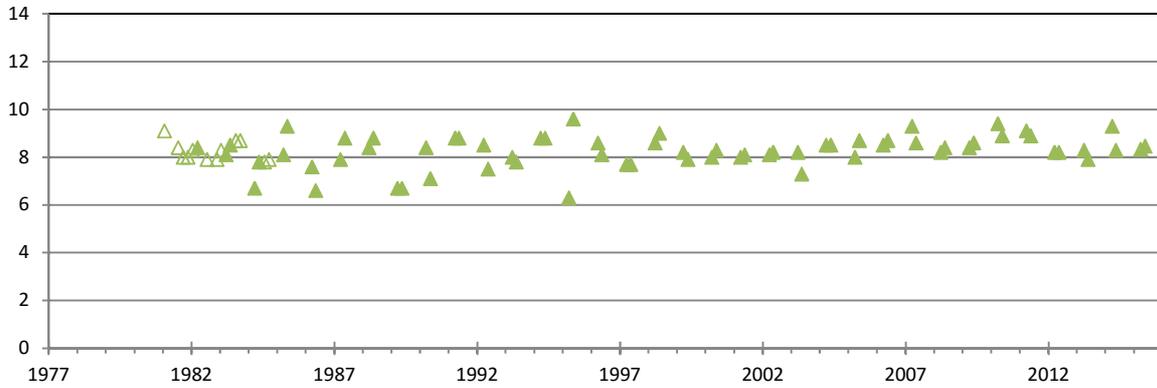
Ronnerup is in the Southern Wheatbelt geographical area (headquartered in Narrogin) of the Wheatbelt DPaw Region.

# SHARK

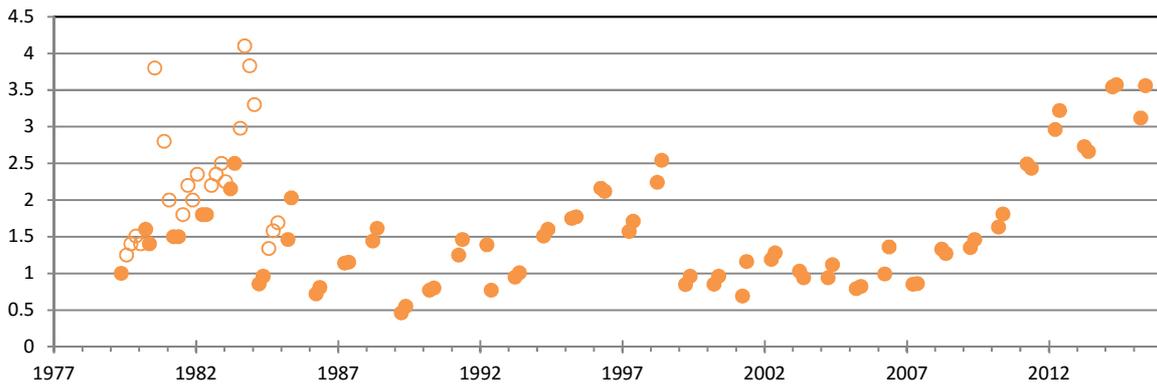
Depth (mLD)



pH



Salinity (ppt)



**Notes:**

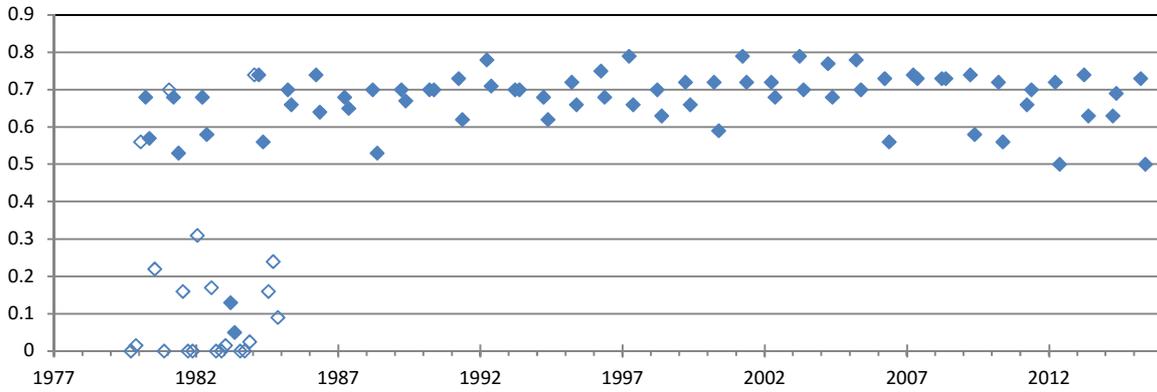
1. Year labels are positioned at 1<sup>st</sup> July each year.
2. Data are from Sept and Nov (filled symbols) and Jan, Mar, May & July (empty symbols) routine monitoring periods only.

Shark is within the former Esperance Lakes Natural Diversity Recovery Catchment.

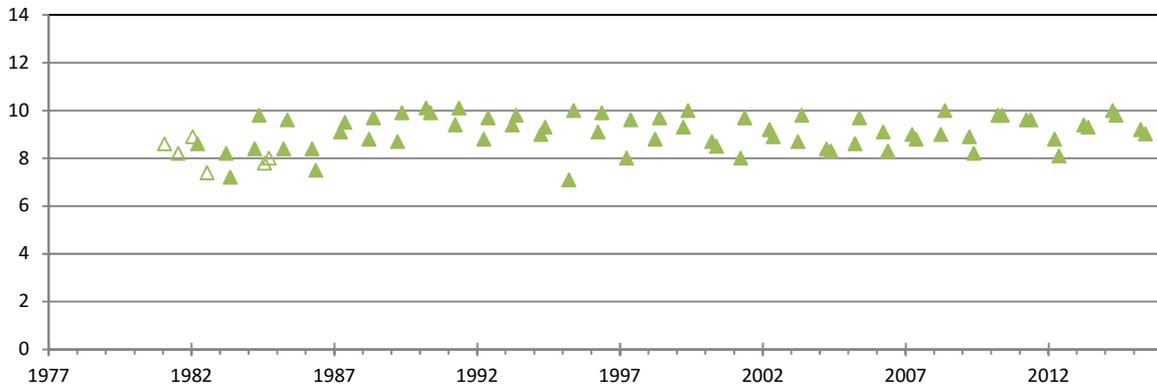
Shark is in the Esperance District of the South Coast DPaw Region.

## STATION (with Salinity axis 0-350ppt)

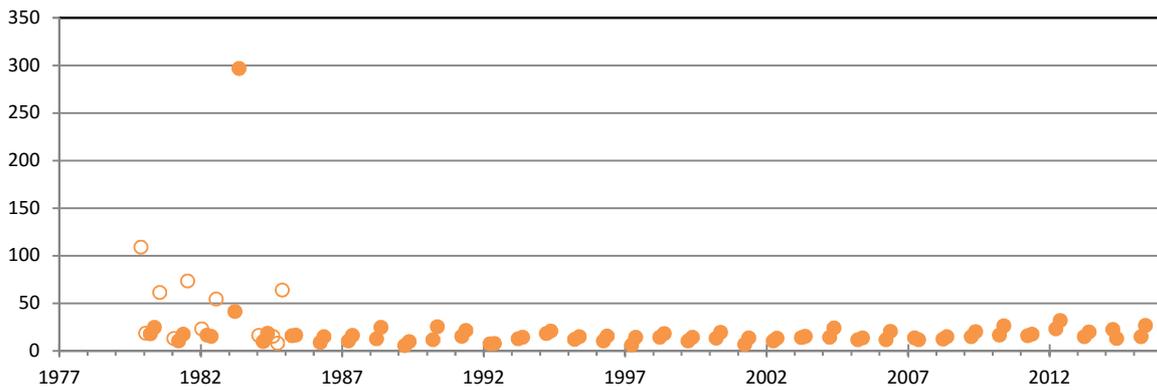
**Depth (mLD)**



**pH**



**Salinity (ppt)**



**Notes:**

1. Year labels are positioned at 1<sup>st</sup> July each year.
2. Data are from Sept and Nov (filled symbols) and Jan, Mar, May & July (empty symbols) routine monitoring periods only.

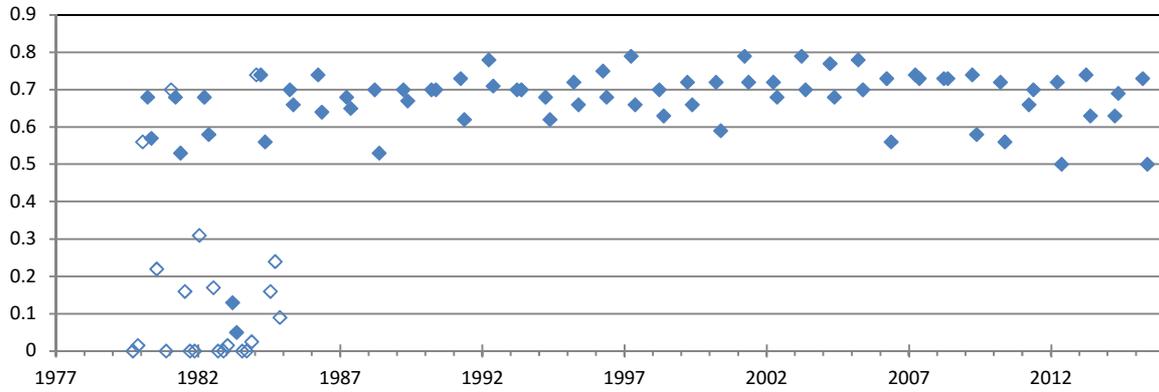
Station is a component of the 'Lake Warden System', which is listed as a Wetland of International Importance under the 'Ramsar' Convention on Wetlands.

Station is also a component of the 'Lake Warden System' listed in the 'Directory of Important Wetlands in Australia'.

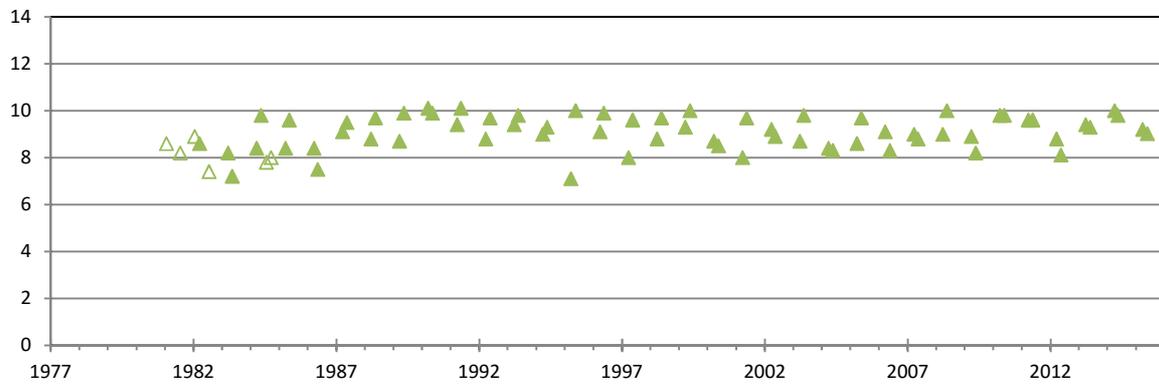
Station is within the former Esperance Lakes Natural Diversity Recovery Catchment and is in the Esperance District of the South Coast DPaW Region.

## STATION (with Salinity axis 0-50ppt)

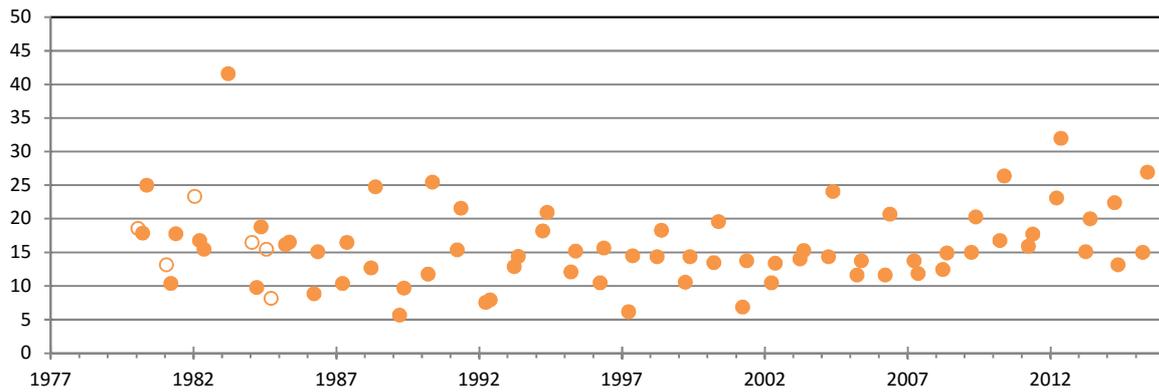
Depth (mLD)



pH



Salinity (ppt)



**Notes:**

1. Year labels are positioned at 1<sup>st</sup> July each year.
2. Data are from Sept and Nov (filled symbols) and Jan, Mar, May & July (empty symbols) routine monitoring periods only.

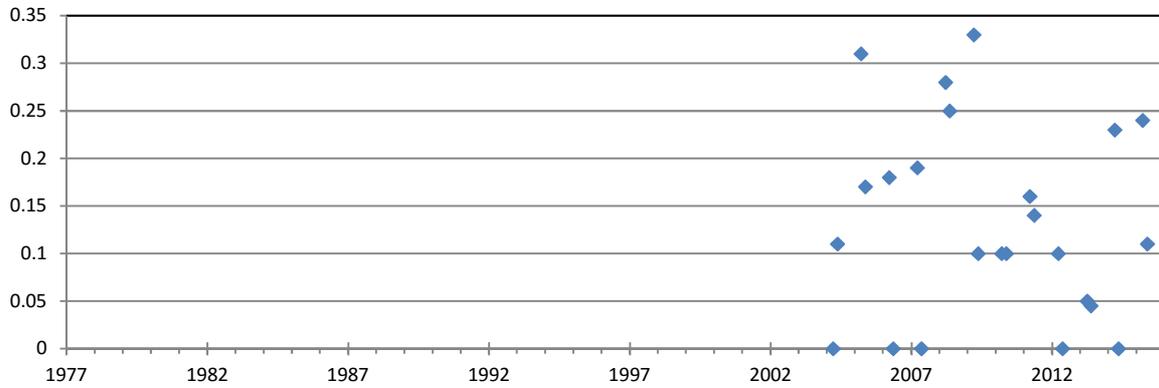
Station is a component of the 'Lake Warden System', which is listed as a Wetland of International Importance under the 'Ramsar' Convention on Wetlands.

Station is also a component of the 'Lake Warden System' listed in the 'Directory of Important Wetlands in Australia'.

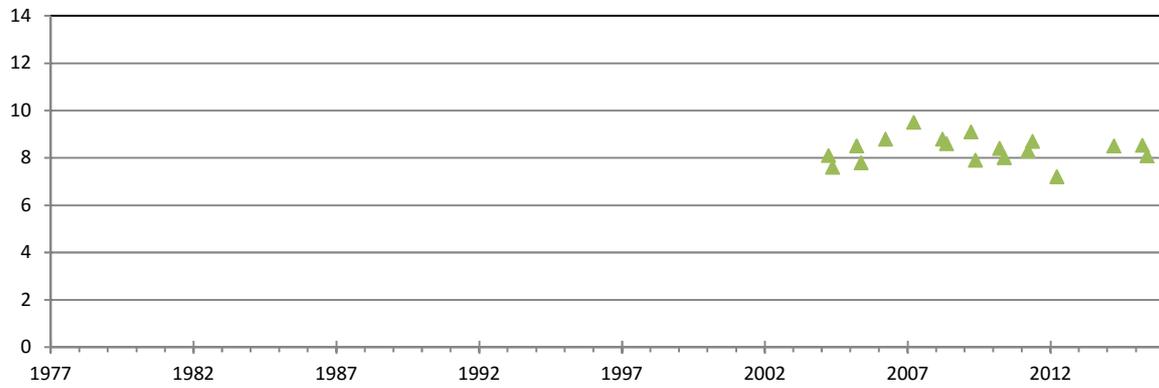
Station is within the former Esperance Lakes Natural Diversity Recovery Catchment and is in the Esperance District of the South Coast DPaW Region.

## TAARBLIN (NORTH)

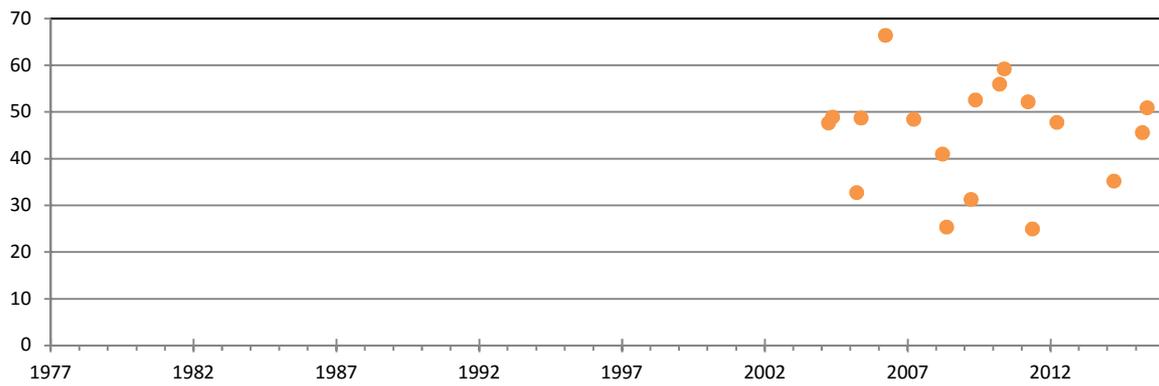
**Depth (mLD)**



**pH**



**Salinity (ppt)**



**Notes:**

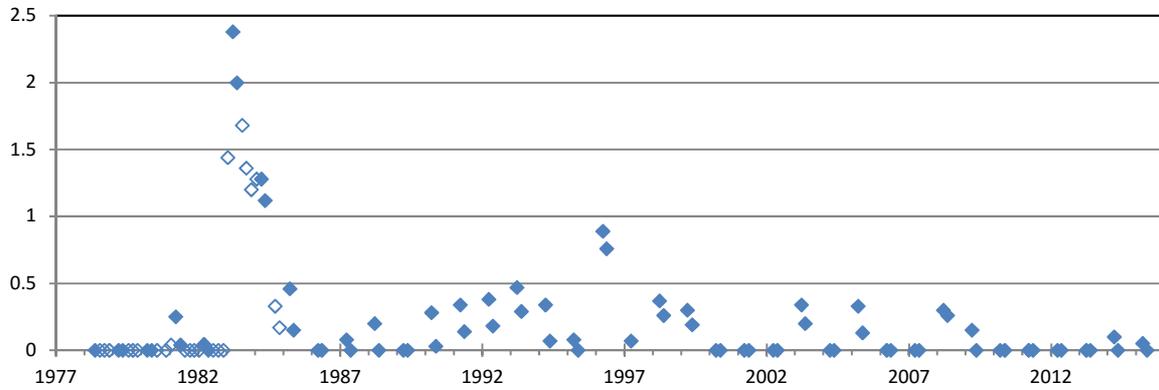
1. Year labels are positioned at 1<sup>st</sup> July each year.
2. Data are from September and November routine monitoring periods only.

Taarblin (North) is a short distance downstream from, and receives pumped, bypassed and potentially overflow water from, the Toolibin Lake Natural Diversity Recovery Catchment.

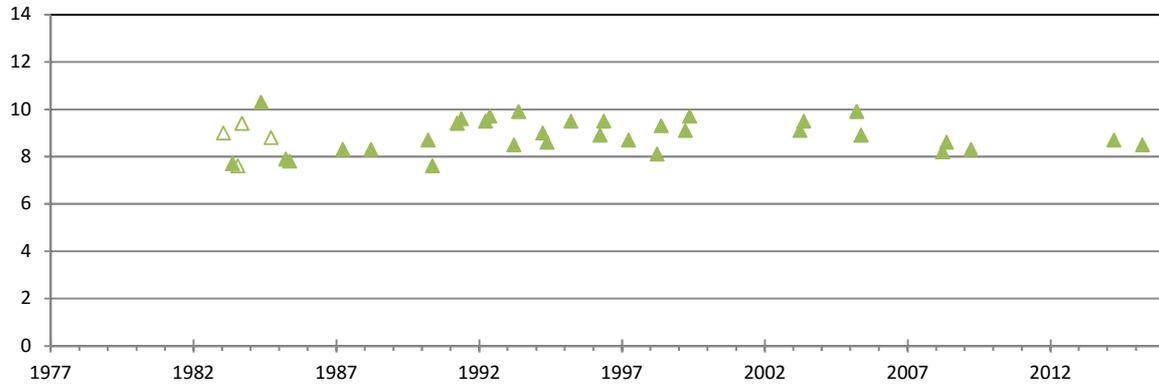
Taarblin (North) is in the Southern Wheatbelt geographical area (headquartered in Narrogin) of the Wheatbelt DPaW Region.

## TAARBLIN (SOUTH)

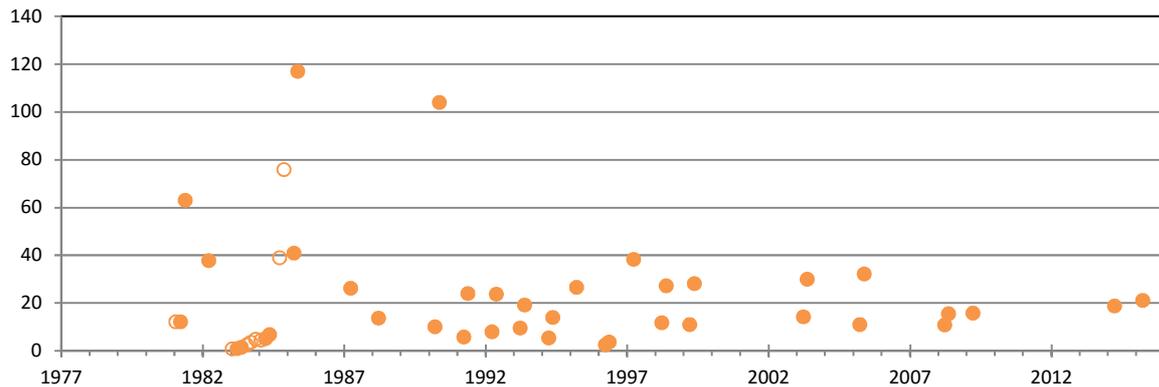
**Depth (mLD)**



**pH**



**Salinity (ppt)**



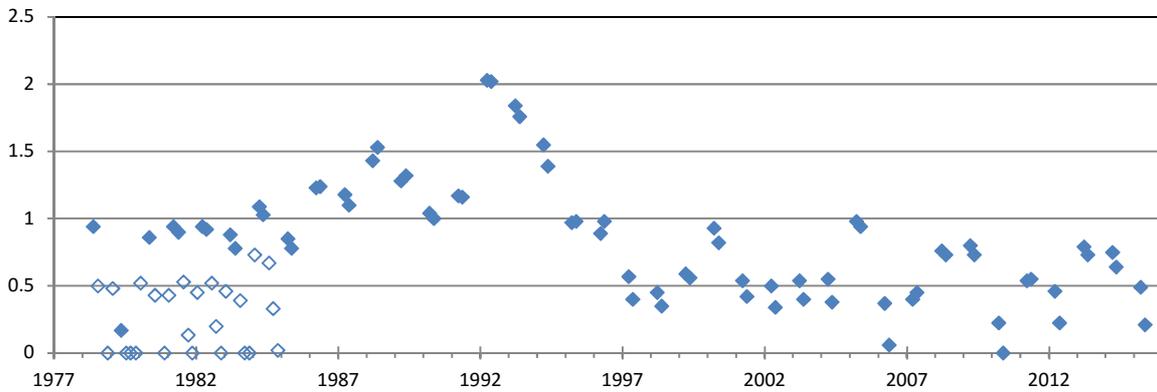
**Notes:**

1. Year labels are positioned at 1<sup>st</sup> July each year.
2. Data are from Sept and Nov (filled symbols) and Jan, Mar, May & July (empty symbols) routine monitoring periods only.

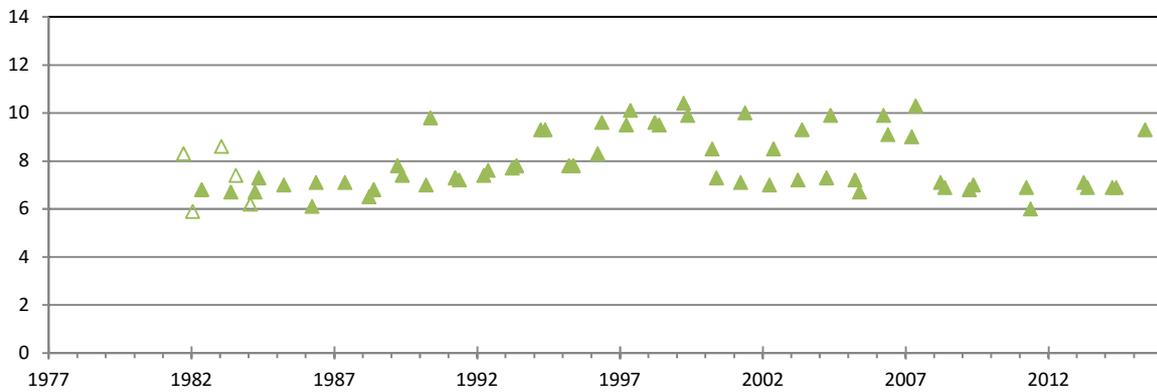
Taarblin (South) is in the Southern Wheatbelt geographical area (headquartered in Narrogin) of the Wheatbelt DPaW Region.

## THOMSONS

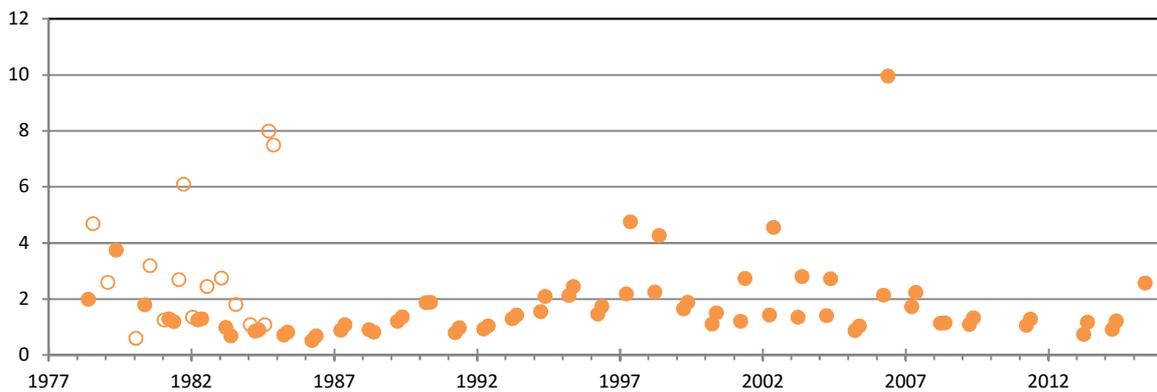
Depth (mLD)



pH



Salinity (ppt)



**Notes:**

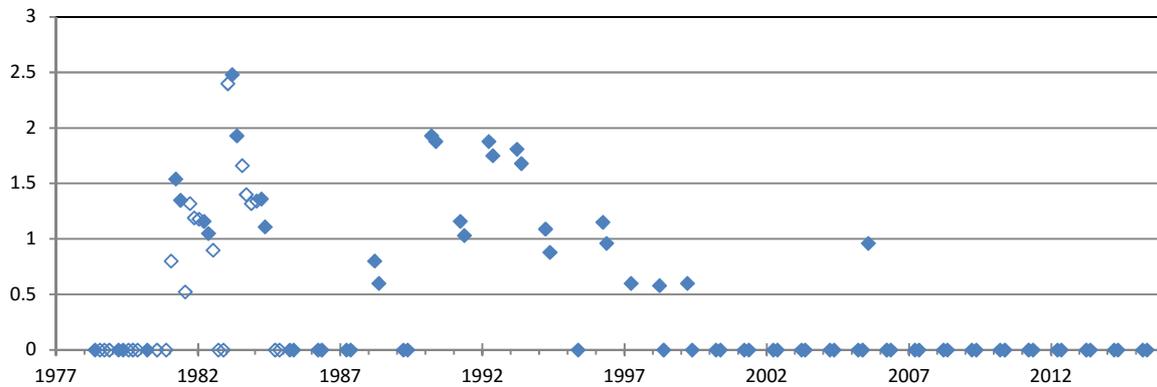
1. Year labels are positioned at 1<sup>st</sup> July each year.
2. Data are from Sept and Nov (filled symbols) and Jan, Mar, May & July (empty symbols) routine monitoring periods only.

Thomsons Lake is a component of the 'Forrestdale and Thomsons Lakes' system, which is listed as a Wetland of International Importance under the 'Ramsar' Convention on Wetlands, and is also listed in the 'Directory of Important Wetlands in Australia'.

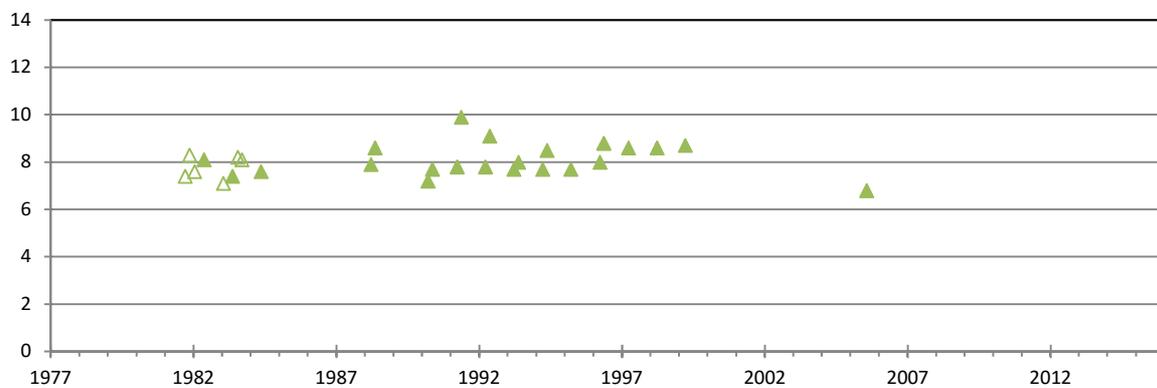
Thomsons is in the Swan Coastal District (headquartered in Wanneroo) of the Swan DPaW Region.

## TOOLIBIN<sup>IM</sup>

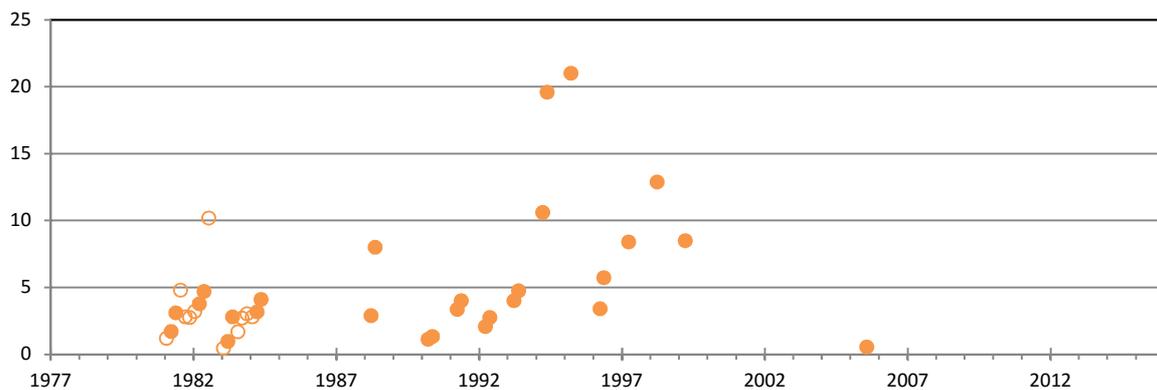
### Depth (mLD)



### pH



### Salinity (ppt)



#### Notes:

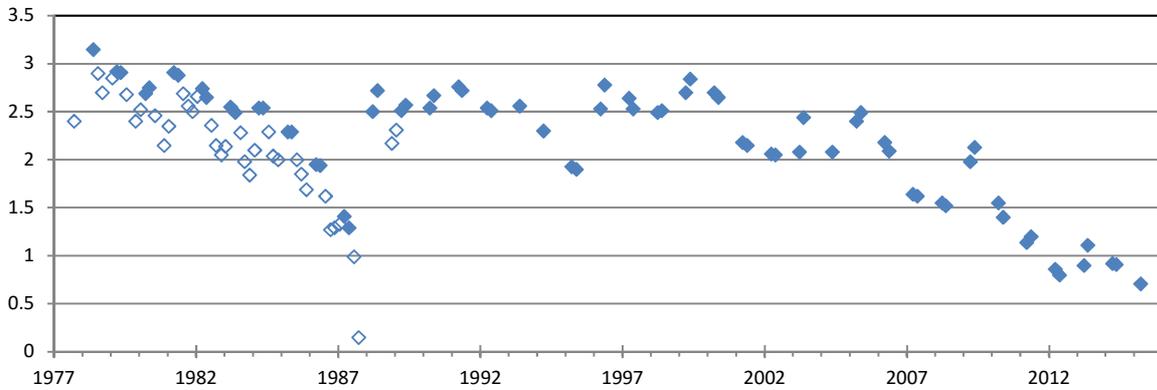
- <sup>IM</sup> indicates this is one of 25 wetlands Intensively Monitored for additional biological and physico-chemical attributes.
- Year labels are positioned at 1<sup>st</sup> July each year.
- Data are from Sept and Nov (filled symbols) and Jan, Mar, May & July (empty symbols) routine monitoring periods only.
- SWWMP depth recordings less than  $\approx 0.5$ m at Toolibin are problematic. Contact author J. Lane for guidance.

Toolibin Lake is listed as a Wetland of International Importance under the 'Ramsar' Convention on Wetlands and is also listed in the 'Directory of Important Wetlands in Australia'.

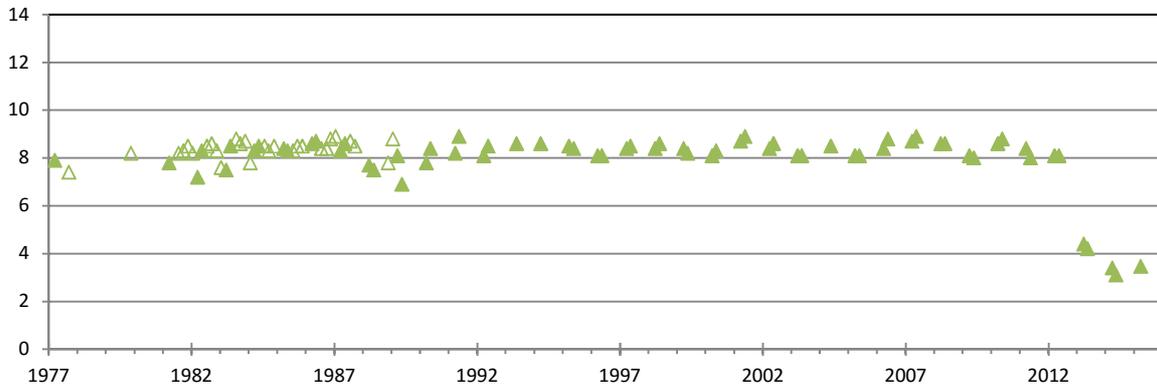
Toolibin is in the Toolibin Lake Natural Diversity Recovery Catchment and is in the Southern Wheatbelt geographical area (headquartered in Narrogin) of the Wheatbelt DPaW Region.

## TORDIT-GURRUP

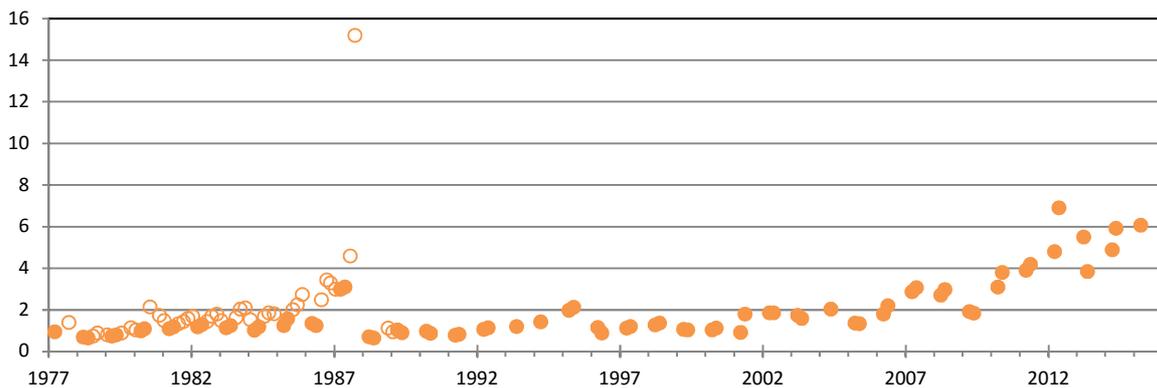
**Depth (mLD)**



**pH**



**Salinity (ppt)**



**Notes:**

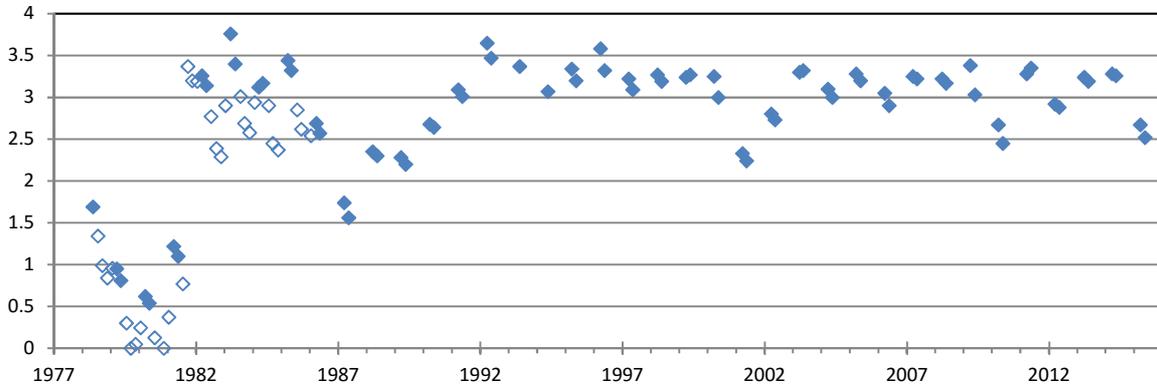
1. Year labels are positioned at 1<sup>st</sup> July each year.
2. Data are from Sept and Nov (filled symbols) and Jan, Mar, May & July (empty symbols) routine monitoring periods only.

Tordit-Gurrup is a component of the 'Muir-Byenup System', which is listed as a Wetland of International Importance under the 'Ramsar' Convention on Wetlands, and is also a component of the 'Byenup Lagoon System' listed in the 'Directory of Important Wetlands in Australia'.

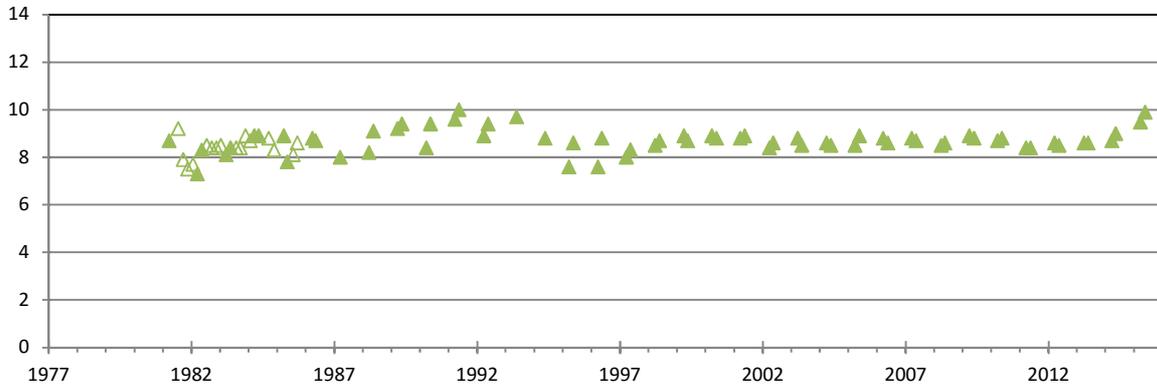
Tordit-Gurrup is within the former Muir-Unicup Natural Diversity Recovery Catchment and is in the Donnelly District (headquartered in Pemberton) of the Warren DPaW Region.

## TOWERRINNING <sup>IM</sup>

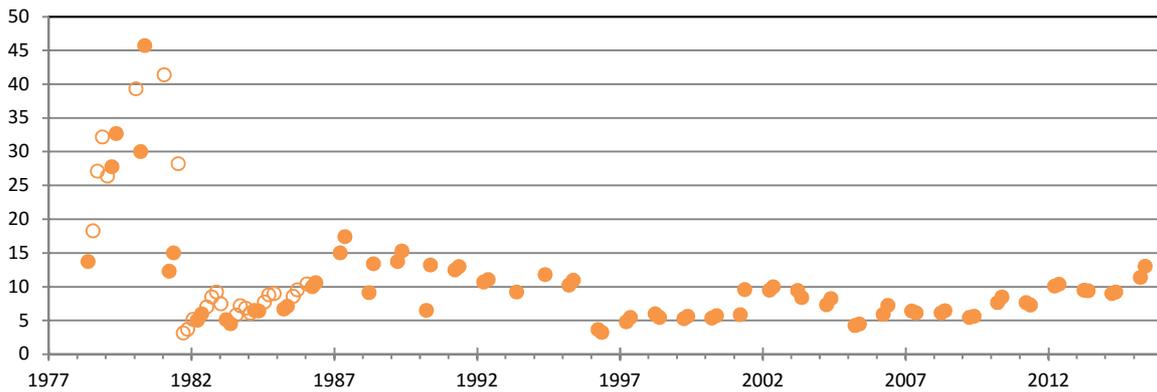
**Depth (mLD)**



**pH**



**Salinity (ppt)**



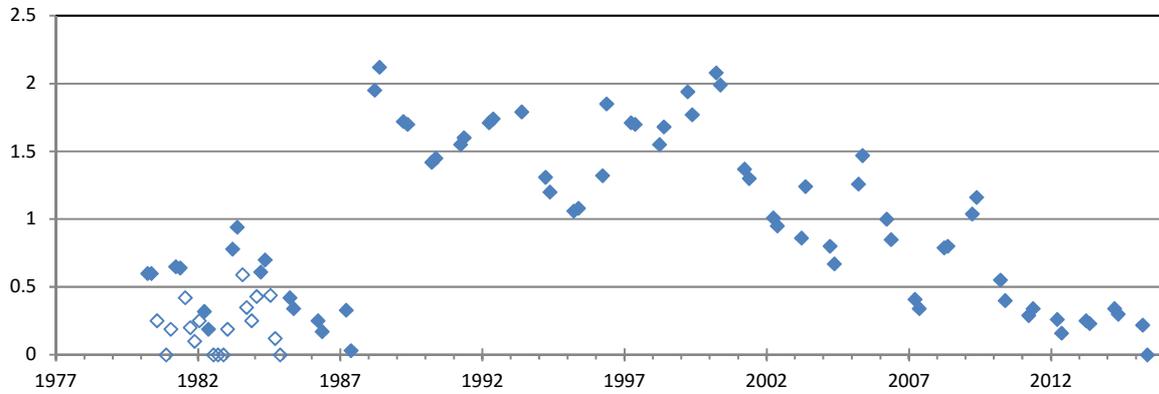
**Notes:**

1. <sup>IM</sup> indicates this is one of 25 wetlands Intensively Monitored for additional biological and physico-chemical attributes.
2. Year labels are positioned at 1<sup>st</sup> July each year.
3. Data are from Sept and Nov (filled symbols) and Jan, Mar, May & July (empty symbols) routine monitoring periods only.

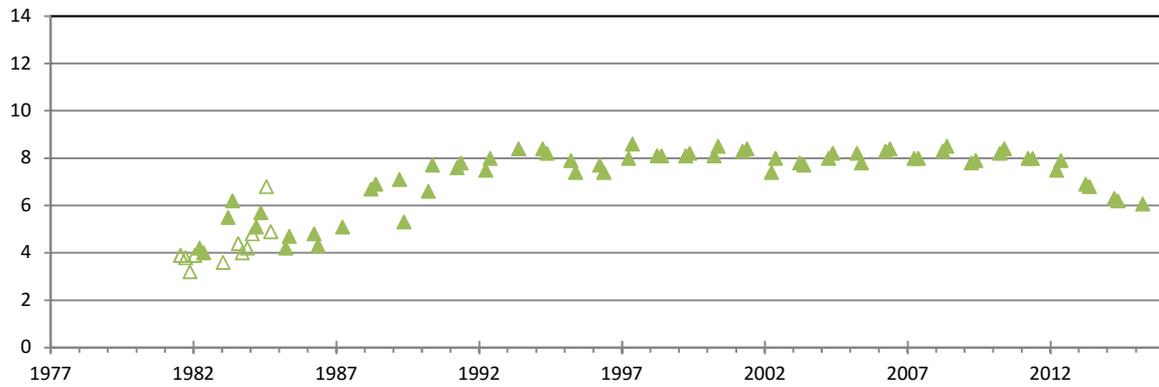
Towerrinning is in the Wellington District (headquartered in Collie) of the South West DPaW Region.

# UNICUP

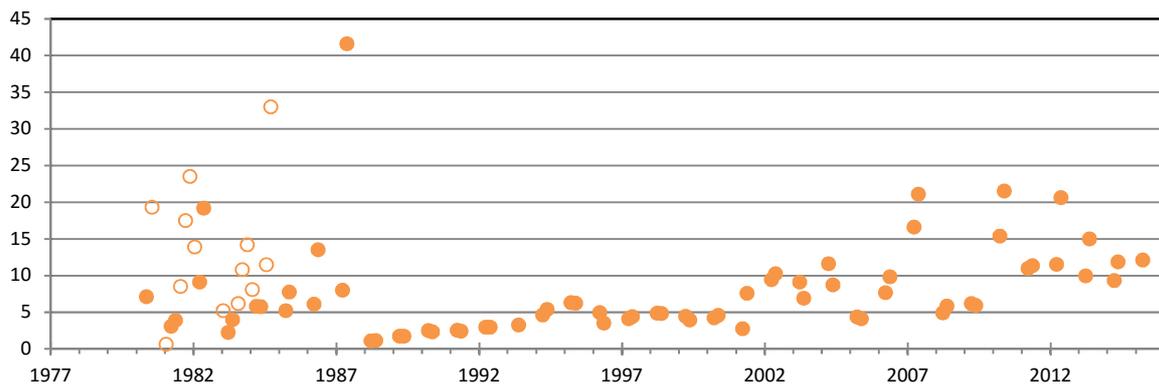
Depth (mLD)



pH



Salinity (ppt)



**Notes:**

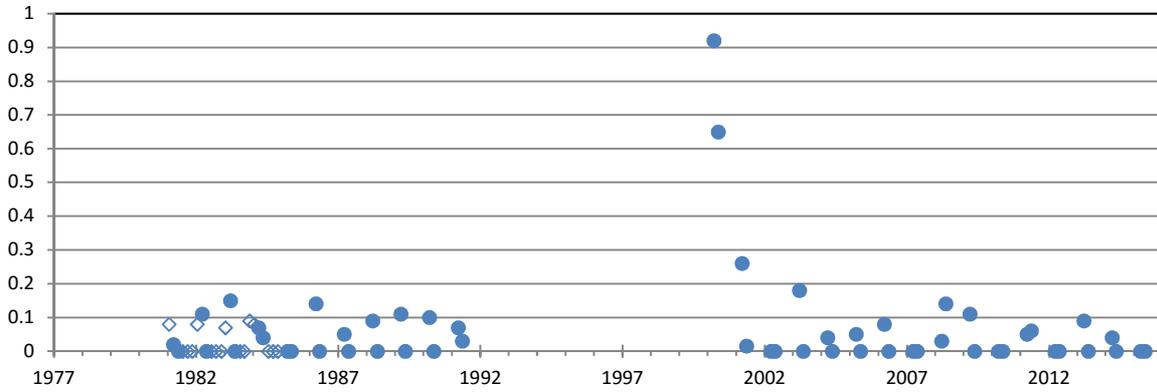
1. Year labels are positioned at 1<sup>st</sup> July each year.
2. Data are from Sept and Nov (filled symbols) and Jan, Mar, May & July (empty symbols) routine monitoring periods only.

Unicup is a component of the 'Byenup Lagoon System', which is listed in the 'Directory of Important Wetlands in Australia'.

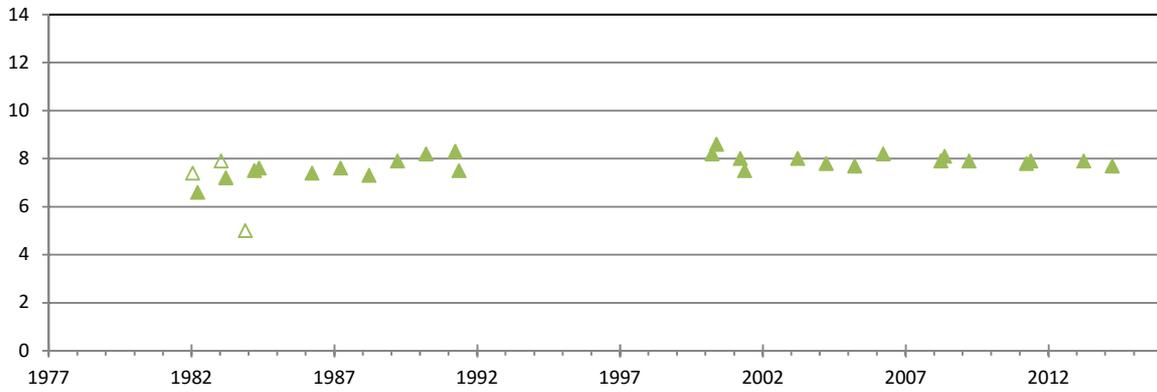
Unicup is within the former Muir-Unicup Natural Diversity Recovery Catchment and is in the Donnelly District (headquartered in Pemberton) of the Warren DPaW Region.

## VARLEY

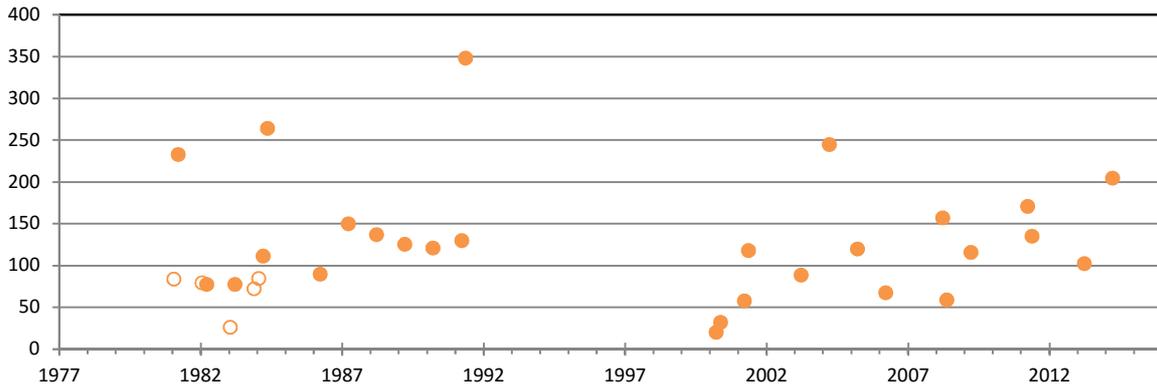
**Depth (mLD)**



**pH**



**Salinity (ppt)**



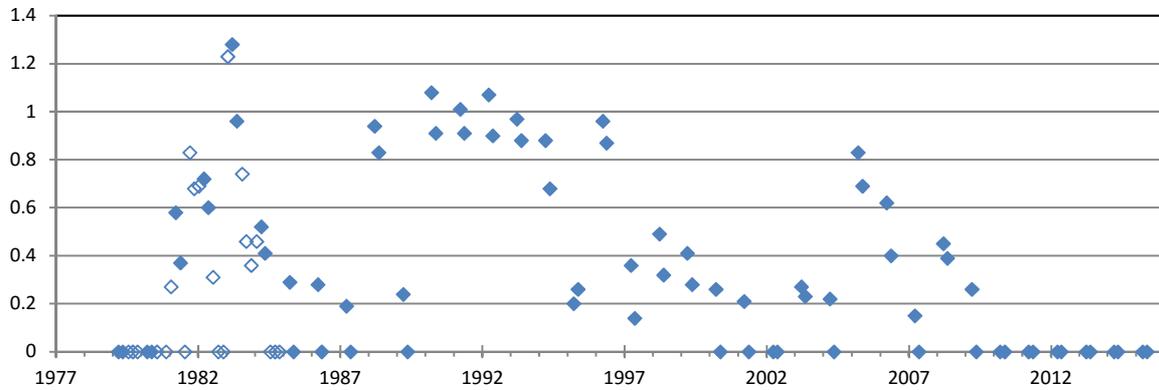
**Notes:**

1. Year labels are positioned at 1<sup>st</sup> July each year.
2. Data are from Sept and Nov (filled symbols) and Jan, Mar, May & July (empty symbols) routine monitoring periods only.

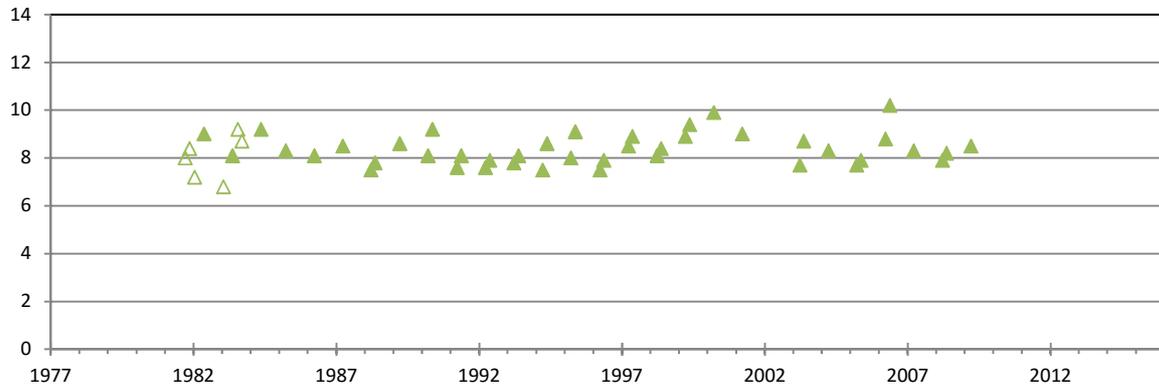
Varley is in the Southern Wheatbelt geographical area (headquartered in Narrogin) of the Wheatbelt DPaW Region.

# WALBYRING

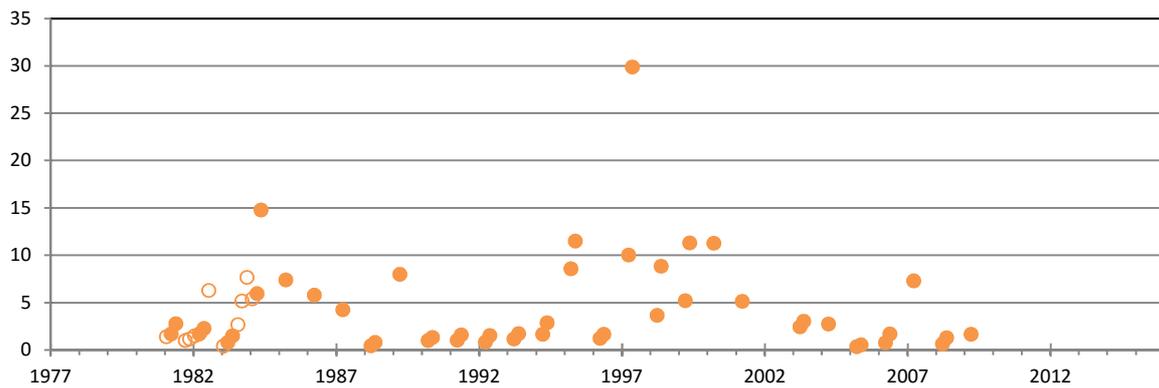
Depth (mLD)



pH



Salinity (ppt)



**Notes:**

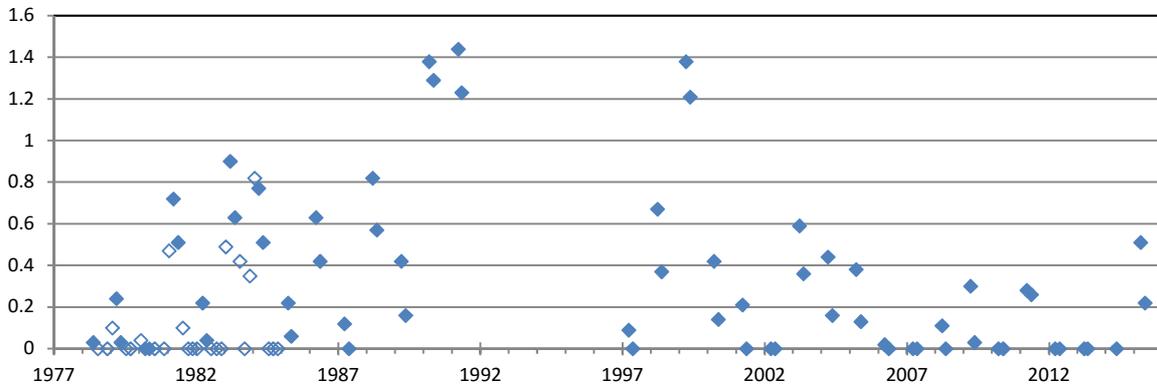
1. Year labels are positioned at 1<sup>st</sup> July each year.
2. Data are from Sept and Nov (filled symbols) and Jan, Mar, May & July (empty symbols) routine monitoring periods only.

Walbyring is a short distance downstream from, and potentially receives overflow water from, the Toolibin Lake Natural Diversity Recovery Catchment.

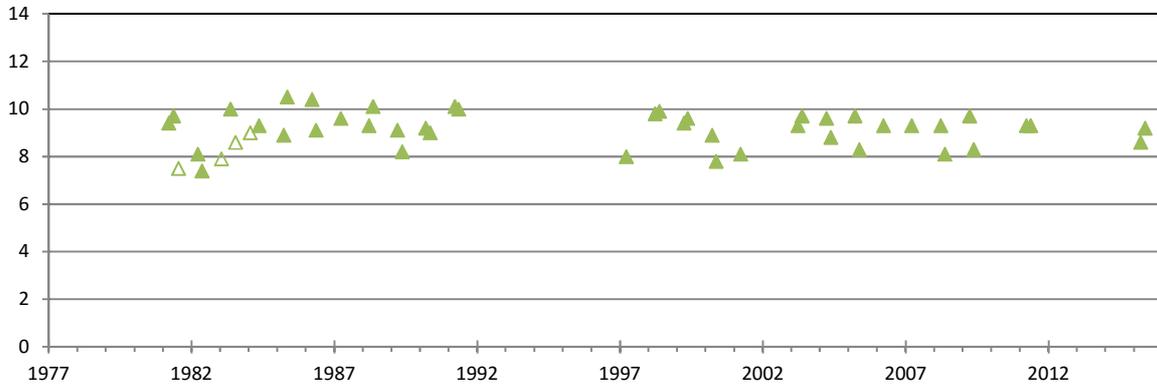
Walbyring is in the Southern Wheatbelt geographical area (headquartered in Narrogin) of the Wheatbelt DPaW Region.

## WALYORMOURING <sup>IM</sup>

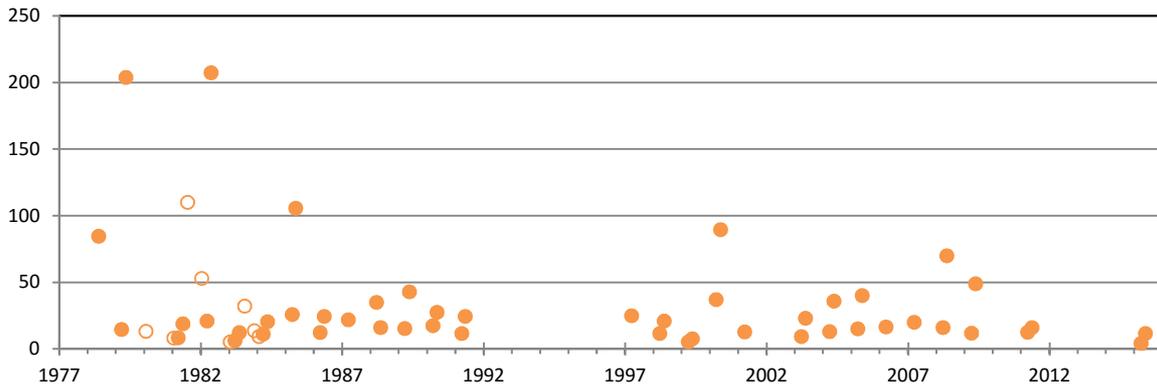
**Depth (mLD)**



**pH**



**Salinity (ppt)**



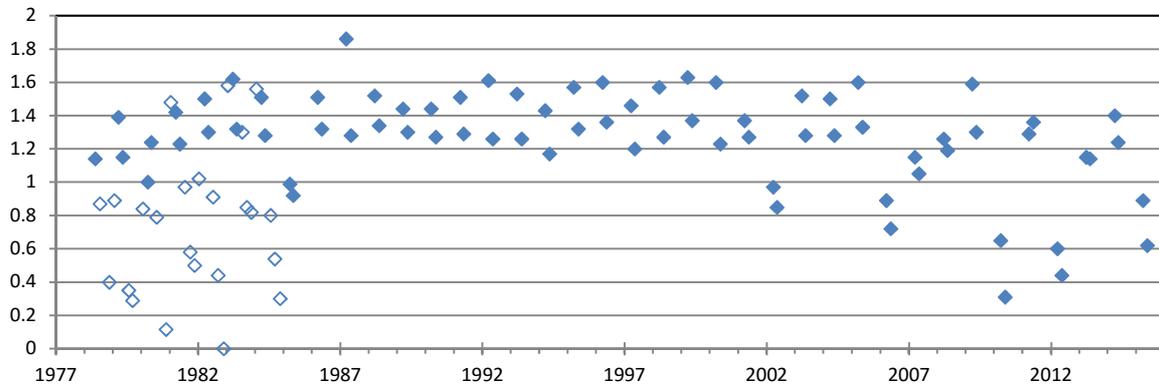
**Notes:**

1. <sup>IM</sup> indicates this is one of 25 wetlands Intensively Monitored for additional biological and physico-chemical attributes.
2. Year labels are positioned at 1<sup>st</sup> July each year.
3. Data are from Sept and Nov (filled symbols) and Jan, Mar, May & July (empty symbols) routine monitoring periods only.

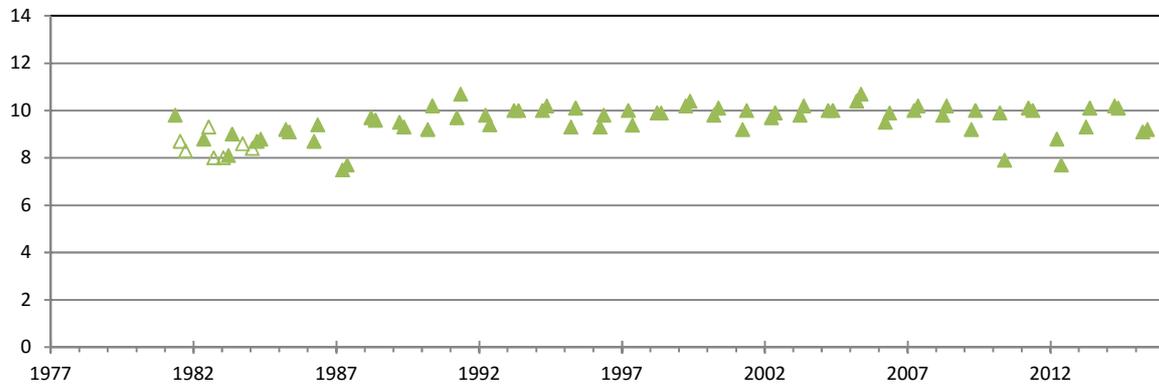
Walyormouring is in the Central District (headquartered in Merredin) of the Wheatbelt DPaW Region.

## WANNAMAL

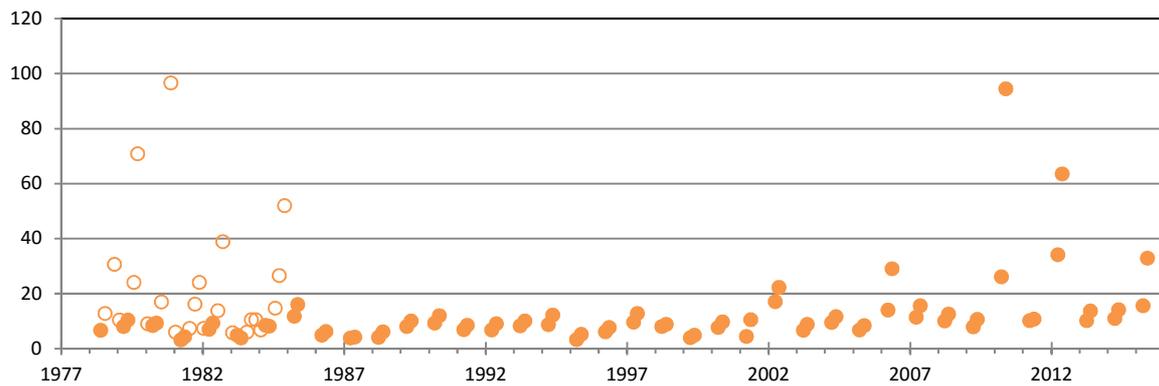
**Depth (mLD)**



**pH**



**Salinity (ppt)**



**Notes:**

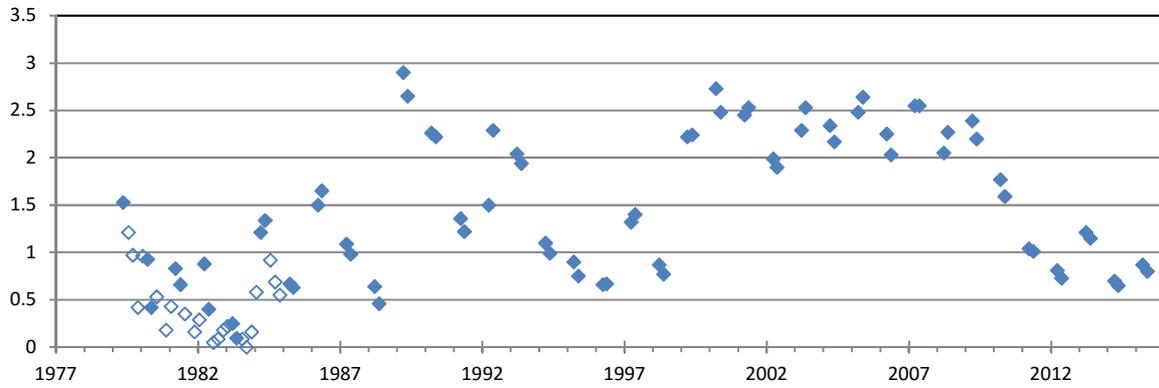
1. Year labels are positioned at 1<sup>st</sup> July each year.
2. Data are from Sept and Nov (filled symbols) and Jan, Mar, May & July (empty symbols) routine monitoring periods only.

Wannamal is a component of the 'Wannamal Lakes System', which is listed in the 'Directory of Important Wetlands in Australia'.

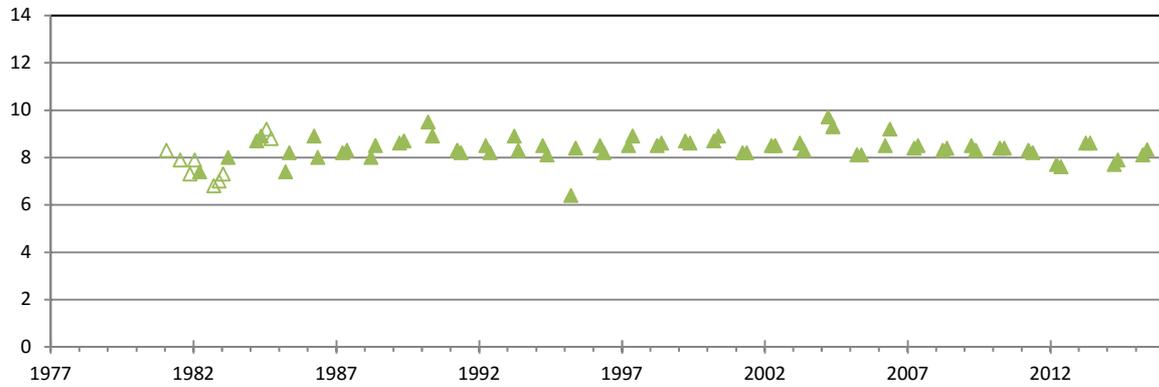
Wannamal is in the Swan Coastal District (headquartered in Wanneroo) of the Swan DPaW Region.

## WARDEN

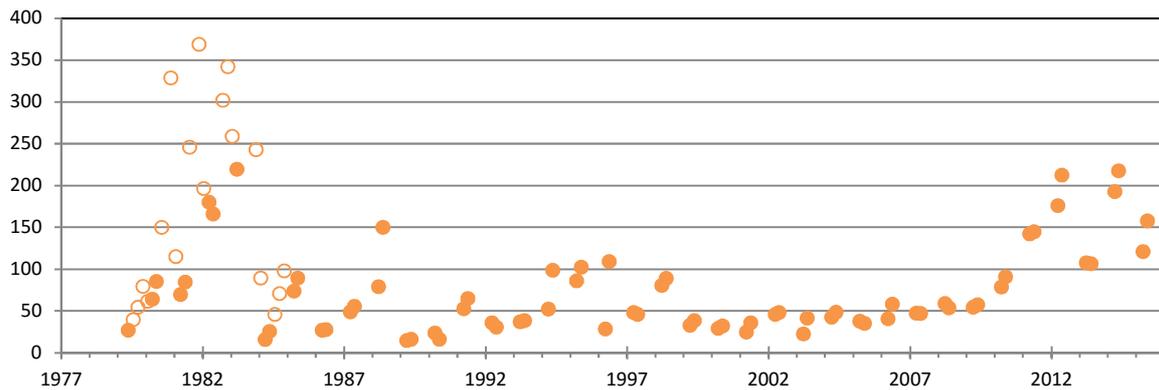
**Depth (mLD)**



**pH**



**Salinity (ppt)**



**Notes:**

1. Year labels are positioned at 1<sup>st</sup> July each year.
2. Data are from Sept and Nov (filled symbols) and Jan, Mar, May & July (empty symbols) routine monitoring periods only.

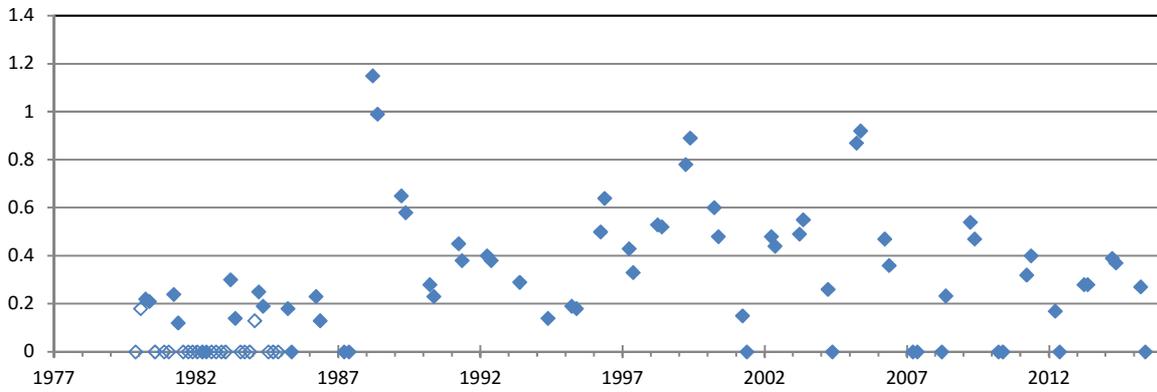
Warden is a component of the 'Lake Warden System', which is listed as a Wetland of International Importance under the 'Ramsar' Convention on Wetlands.

Warden is also a component of the 'Lake Warden System' listed in the 'Directory of Important Wetlands in Australia'.

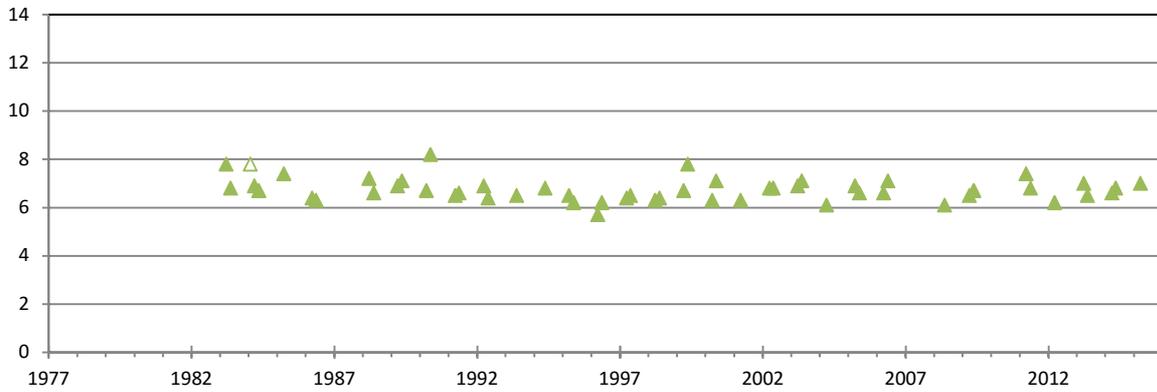
Warden is within the former Esperance Lakes Natural Diversity Recovery Catchment and is in the Esperance District of the South Coast DPaW Region.

# WARRINUP

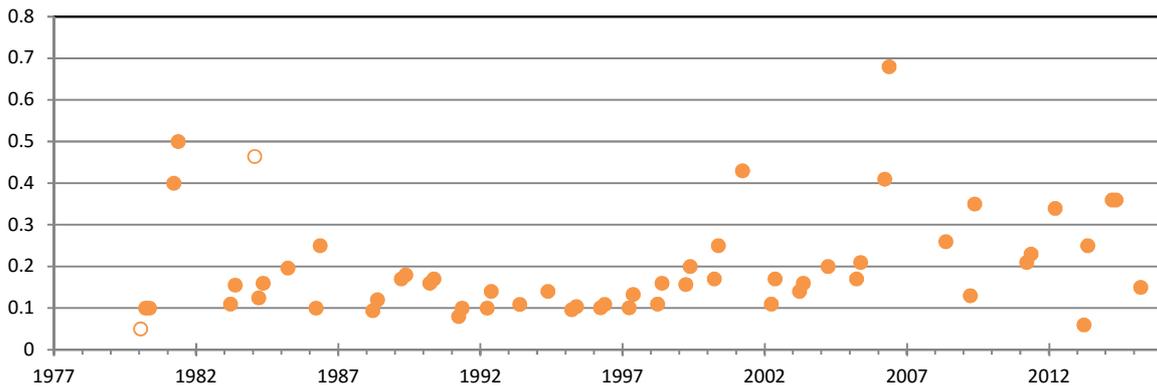
Depth (mLD)



pH



Salinity (ppt)



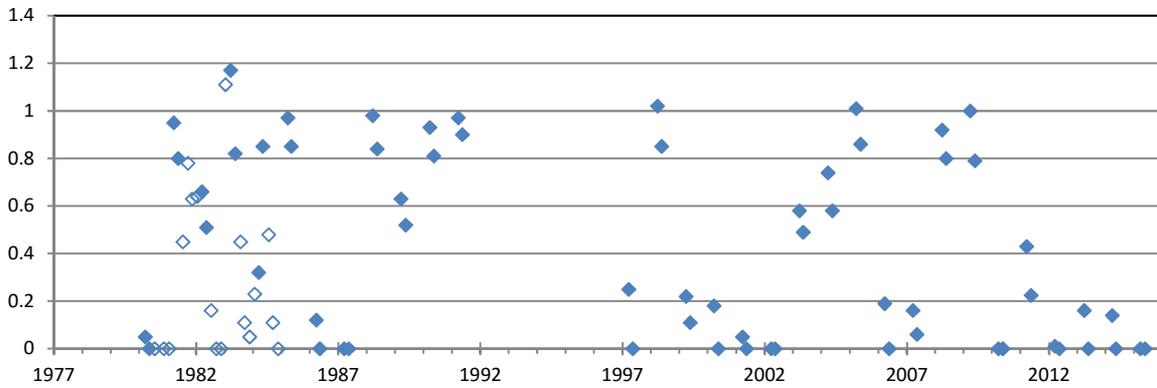
**Notes:**

1. Year labels are positioned at 1<sup>st</sup> July each year.
2. Data are from Sept and Nov (filled symbols) and Jan, Mar, May & July (empty symbols) routine monitoring periods only.

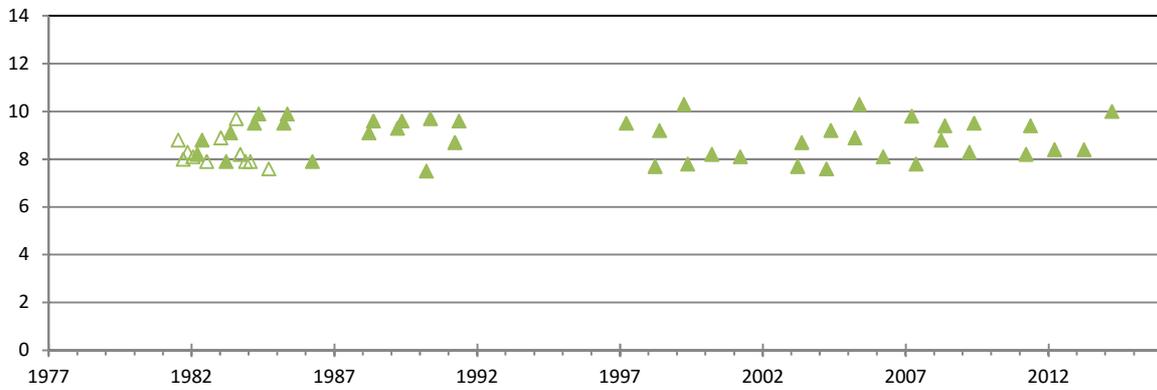
Warrinup is in the Southern Wheatbelt geographical area (headquartered in Narrogin) of the Wheatbelt DPaW Region.

## WEST ARTHUR 5456

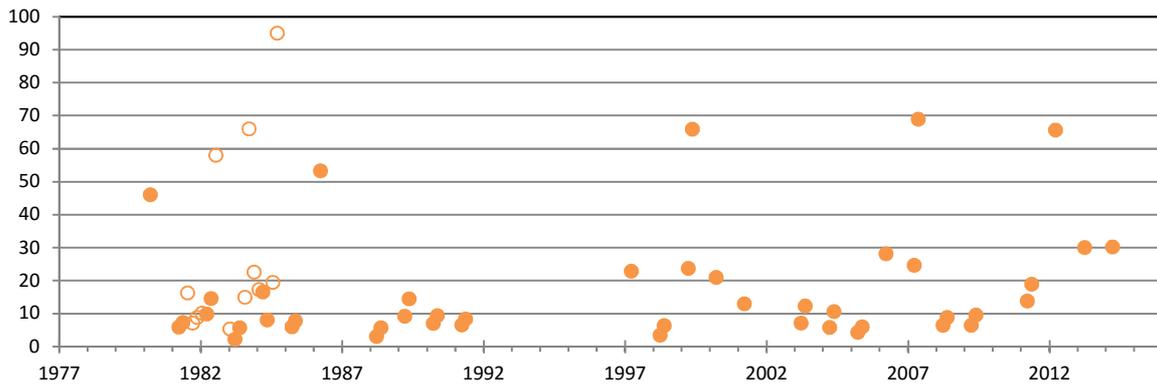
### Depth (mLD)



### pH



### Salinity (ppt)



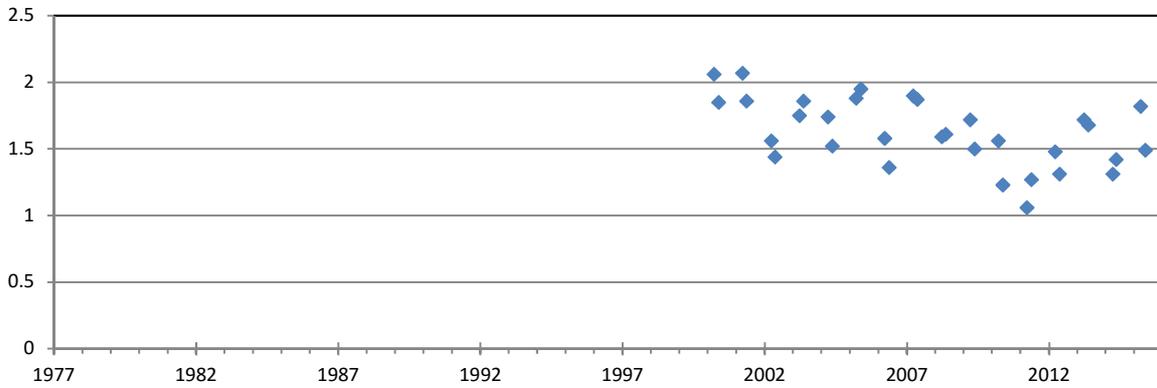
#### Notes:

1. Year labels are positioned at 1<sup>st</sup> July each year.
2. Data are from Sept and Nov (filled symbols) and Jan, Mar, May & July (empty symbols) routine monitoring periods only.

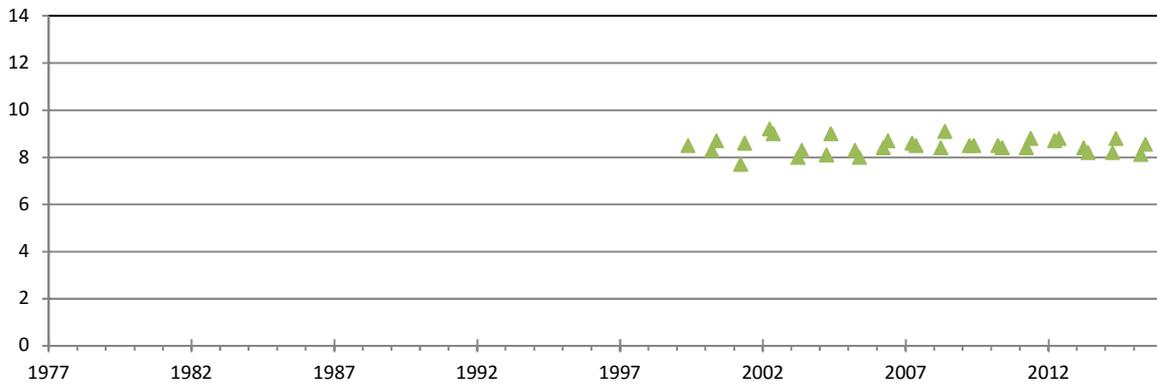
West Arthur 5456 is in the Southern Wheatbelt geographical area (headquartered in Narrogin) of the Wheatbelt DPaW Region.

## WHEATFIELD <sup>IM</sup>

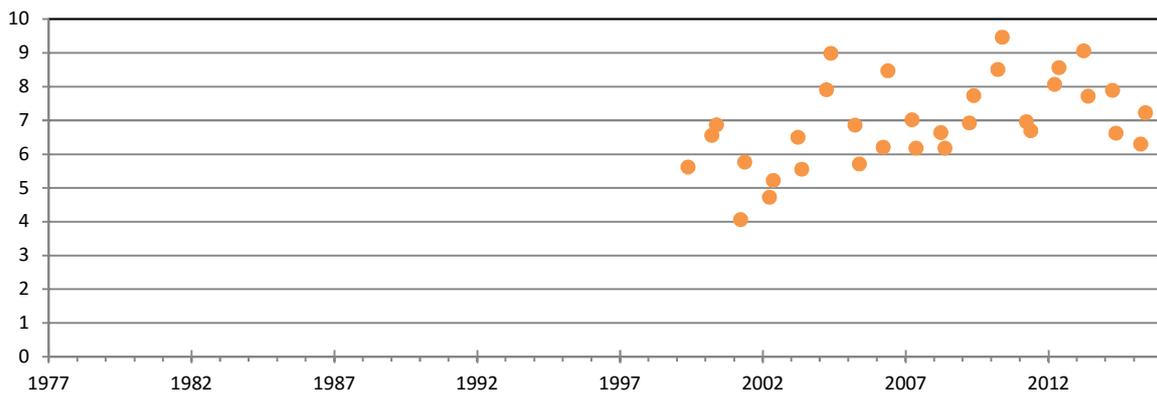
**Depth (mLD)**



**pH**



**Salinity (ppt)**



**Notes:**

1. <sup>IM</sup> indicates this is one of 25 wetlands Intensively Monitored for additional biological and physico-chemical attributes.
2. Year labels are positioned at 1<sup>st</sup> July each year.
3. Data are from September and November routine monitoring periods only.

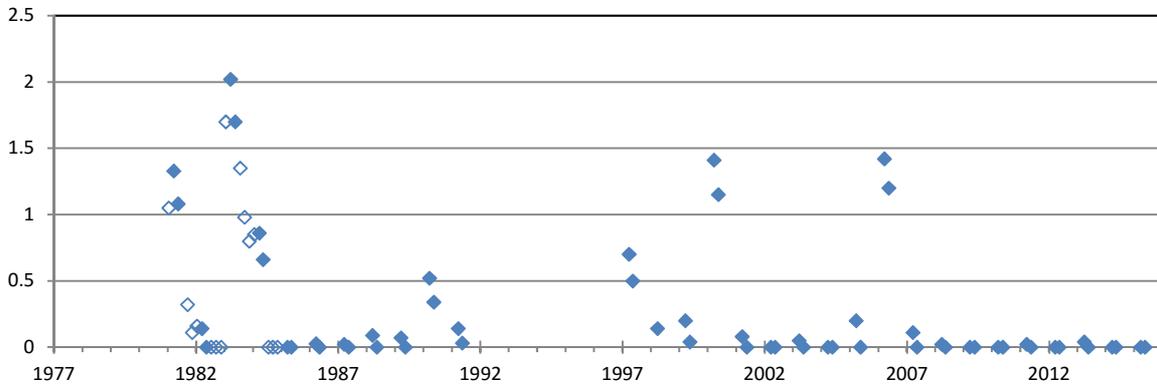
Wheatfield is part of the 'Lake Warden System' listed as a Wetland of International Importance under the 'Ramsar' Convention on Wetlands and is also part of the 'Lake Warden System' listed in the 'Directory of Important Wetlands in Australia'.

Wheatfield is within the former Esperance Lakes Natural Diversity Recovery Catchment and is in the Esperance District of the South Coast DPaw Region.

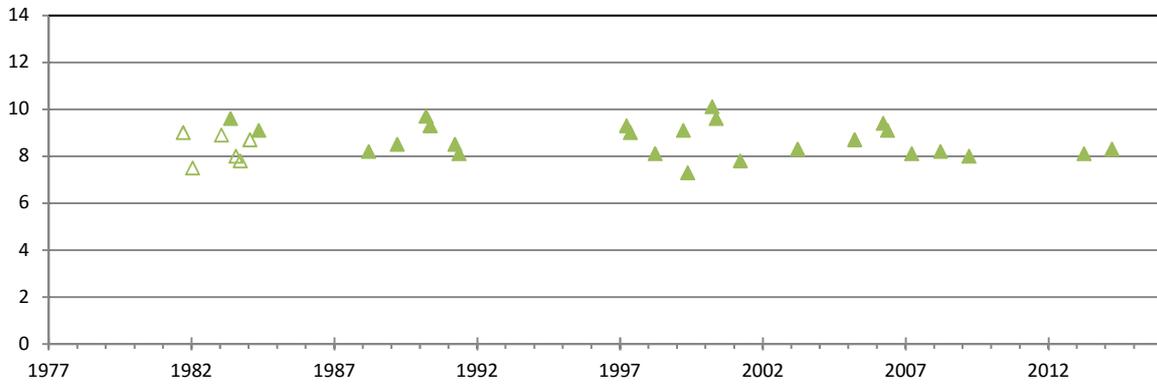


## WHITE WATER

**Depth (mLD)**

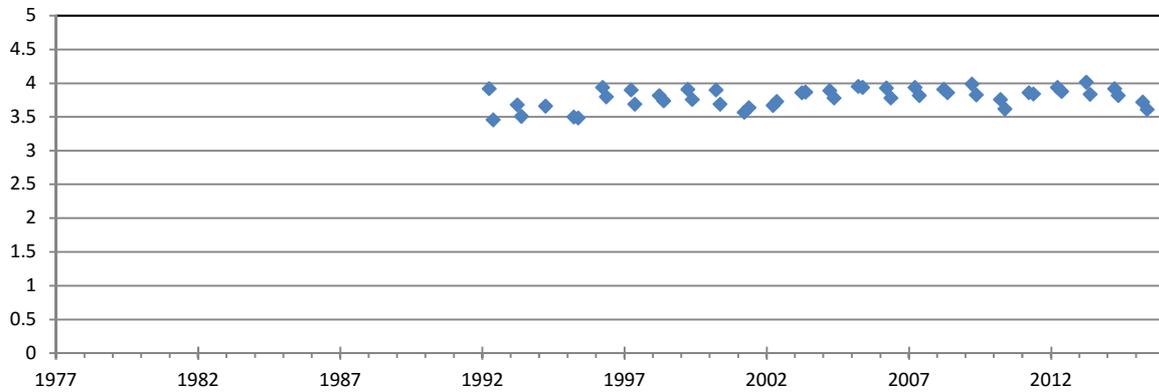


**pH**

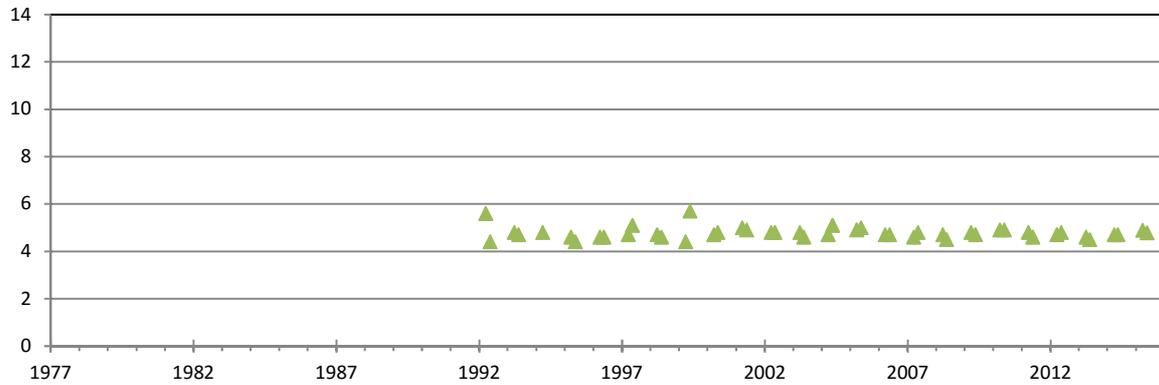


# WILSON

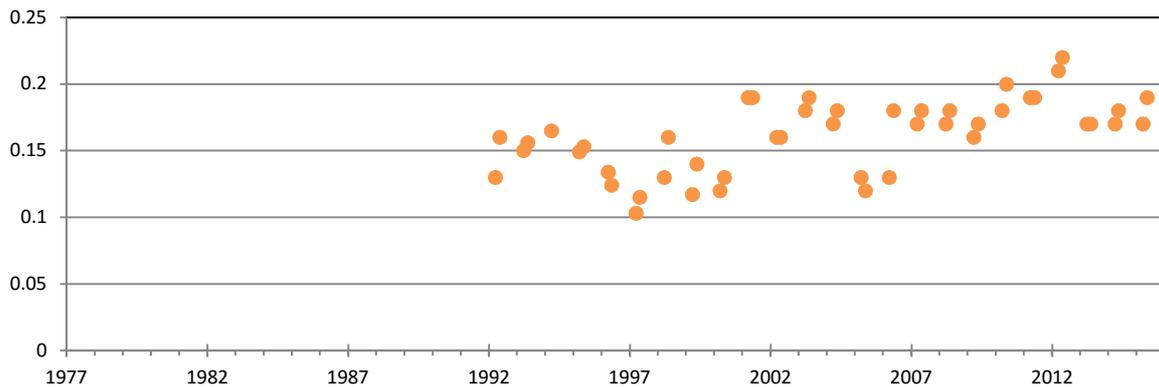
Depth (mLD)



pH



Salinity (ppt)



**Notes:**

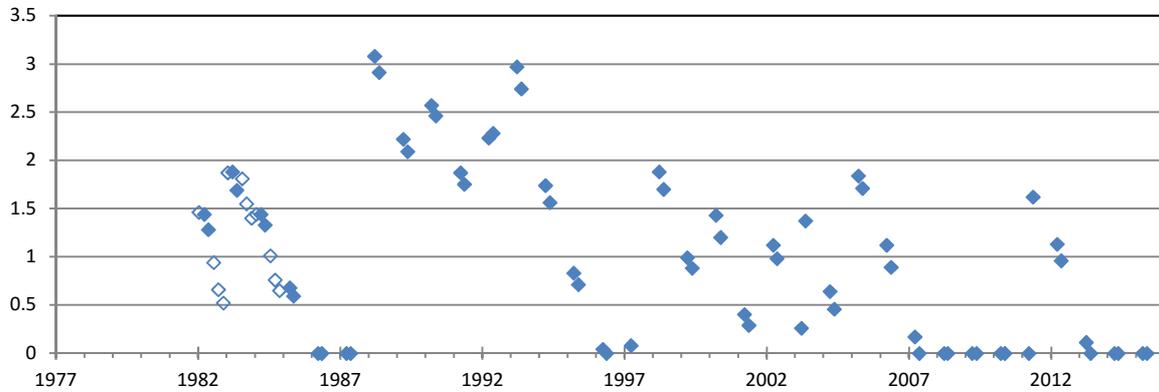
1. Year labels are positioned at 1<sup>st</sup> July each year.
2. Data are from September and November routine monitoring periods only.

Wilson is a component of the 'Gingilup-Jasper Wetland System', which is listed in the 'Directory of Important Wetlands in Australia'.

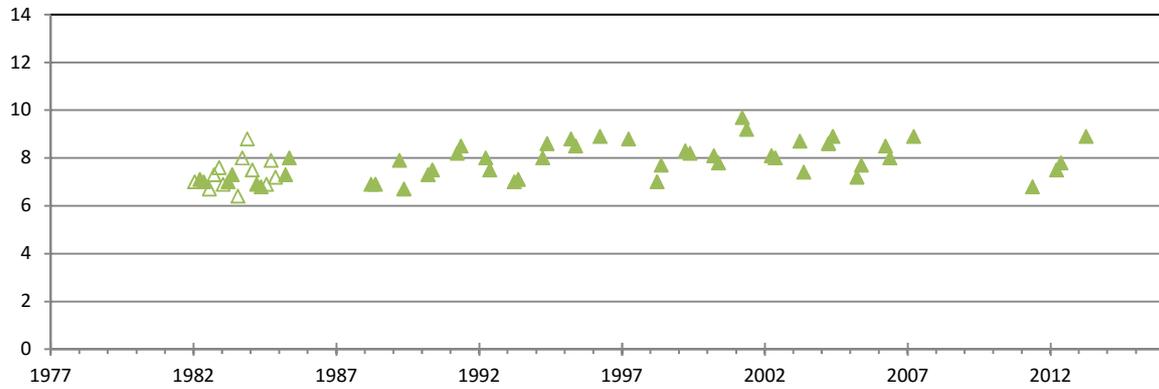
Wilson is in the Donnelly District (headquartered in Pemberton) of the Warren DPaW Region.

# YAALUP<sup>IM</sup>

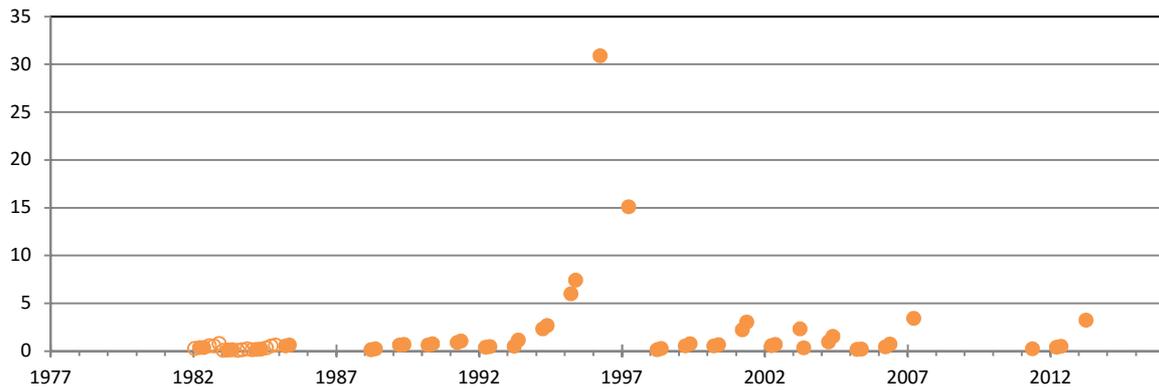
Depth (mLD)



pH



Salinity (ppt)



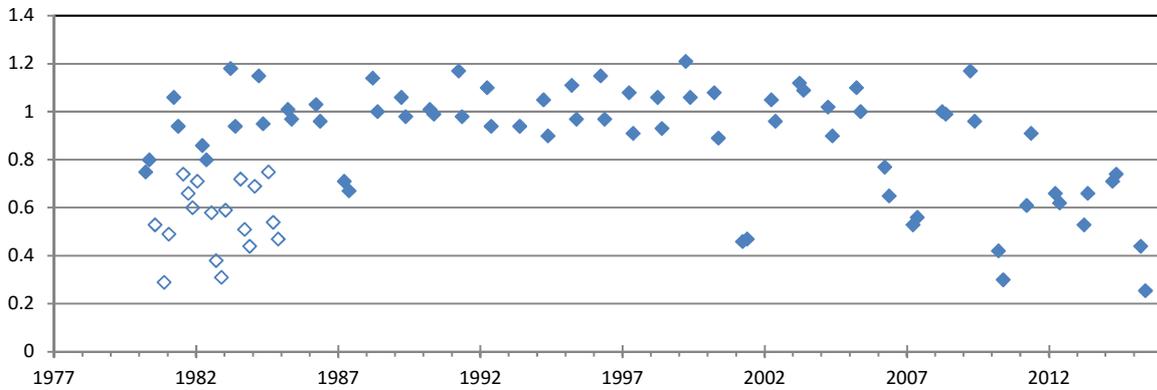
**Notes:**

1. <sup>IM</sup> indicates this is one of 25 wetlands Intensively Monitored for additional biological and physico-chemical attributes.
2. Year labels are positioned at 1<sup>st</sup> July each year.
3. Data are from Sept and Nov (filled symbols) and Jan, Mar, May & July (empty symbols) routine monitoring periods only.

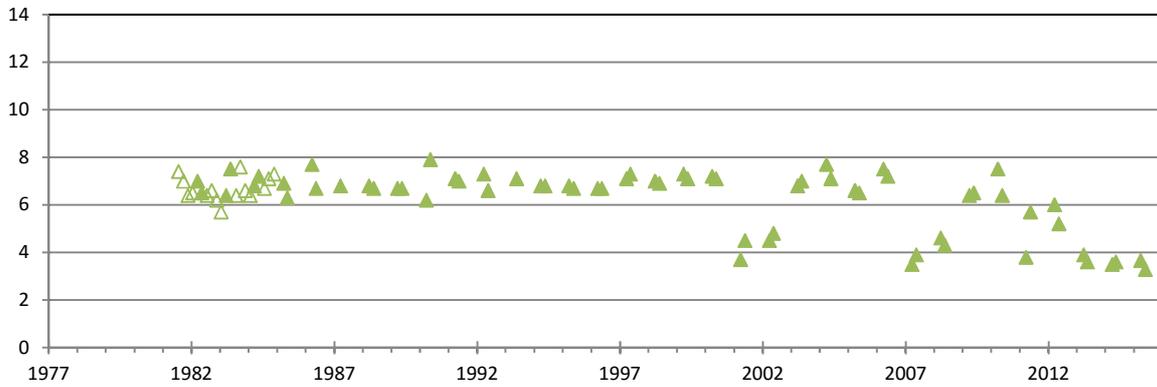
Yaalup is in the Southern Wheatbelt geographical area (headquartered in Narrogin) of the Wheatbelt DPaW Region.

# YARNUP

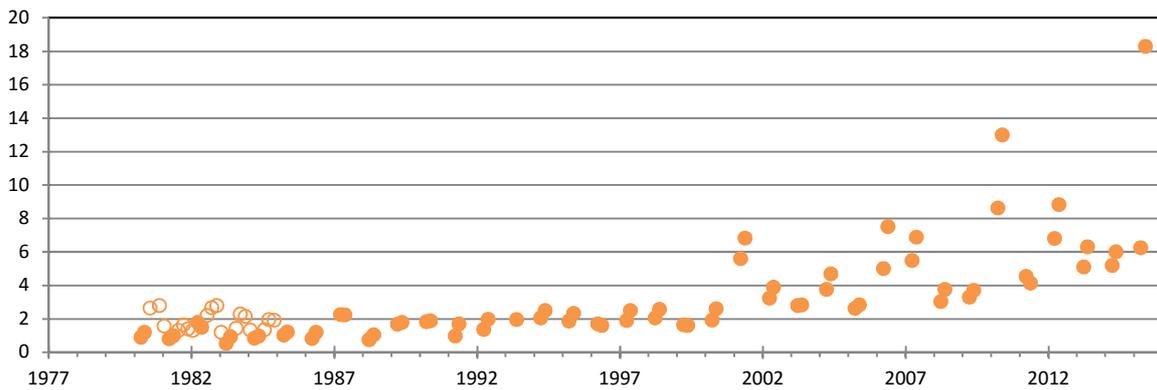
Depth (mLD)



pH



Salinity (ppt)



**Notes:**

1. Year labels are positioned at 1<sup>st</sup> July each year.
2. Data are from Sept and Nov (filled symbols) and Jan, Mar, May & July (empty symbols) routine monitoring periods only.

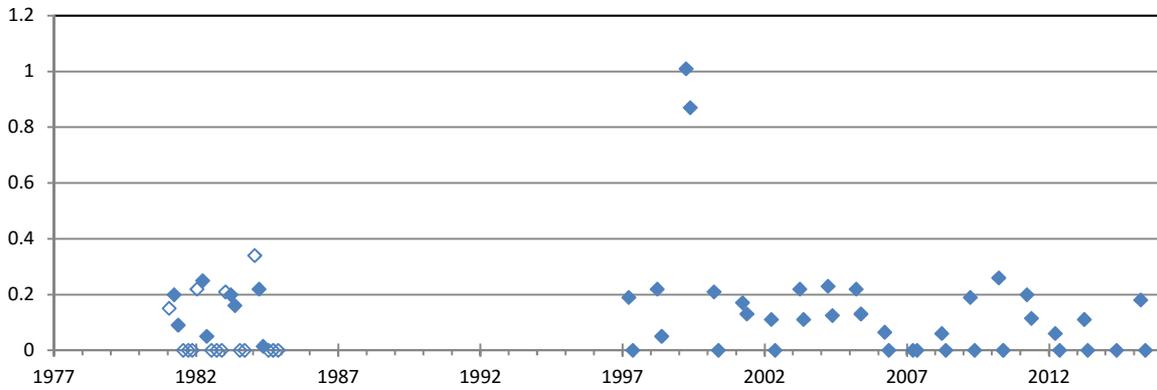
Yarnup is a component of the 'Byenup Lagoon System', which is listed in the 'Directory of Important Wetlands in Australia'.

Yarnup is within the former Muir-Unicup Natural Diversity Recovery Catchment.

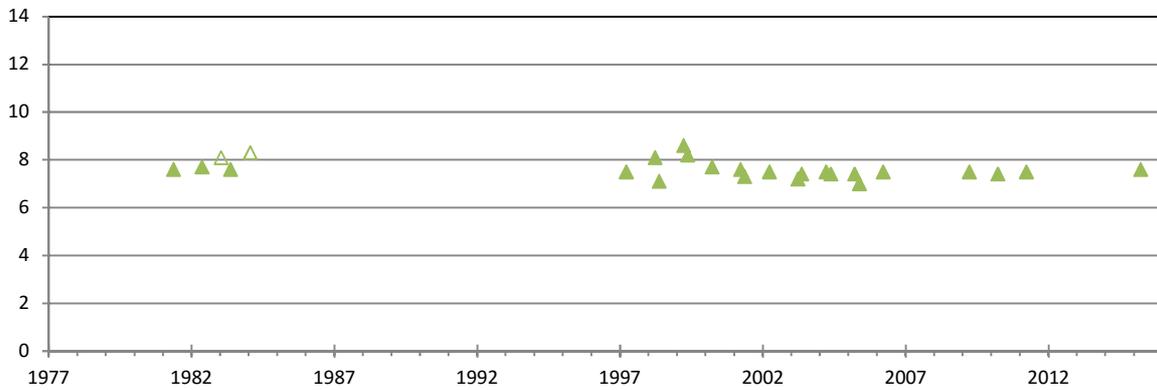
Yarnup is in the Donnelly District (headquartered in Pemberton) of the Warren DPaW Region.

## YARRA YARRA

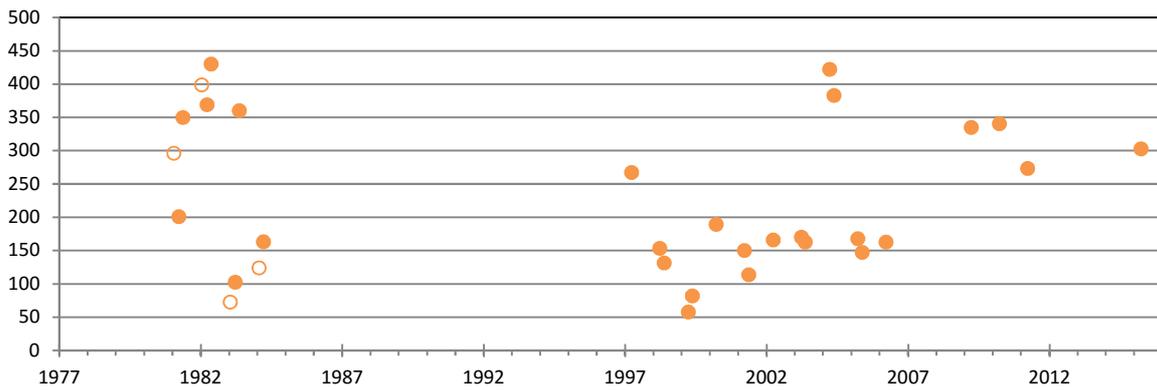
**Depth (mLD)**



**pH**



**Salinity (ppt)**



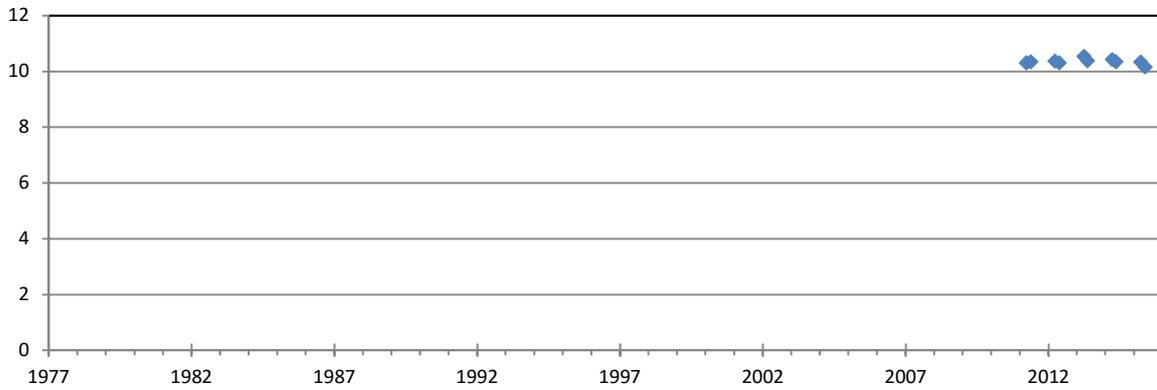
**Notes:**

1. Year labels are positioned at 1<sup>st</sup> July each year.
2. Data are from Sept and Nov (filled symbols) and Jan, Mar, May & July (empty symbols) routine monitoring periods only.

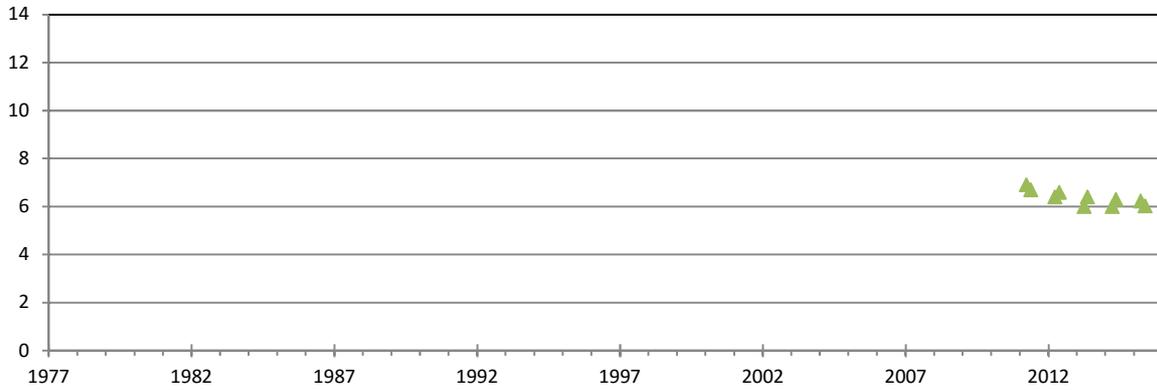
Yarra Yarra is in the Moora District (headquartered in Jurien Bay) of the Midwest DPaW Region.

# YEAGARUP

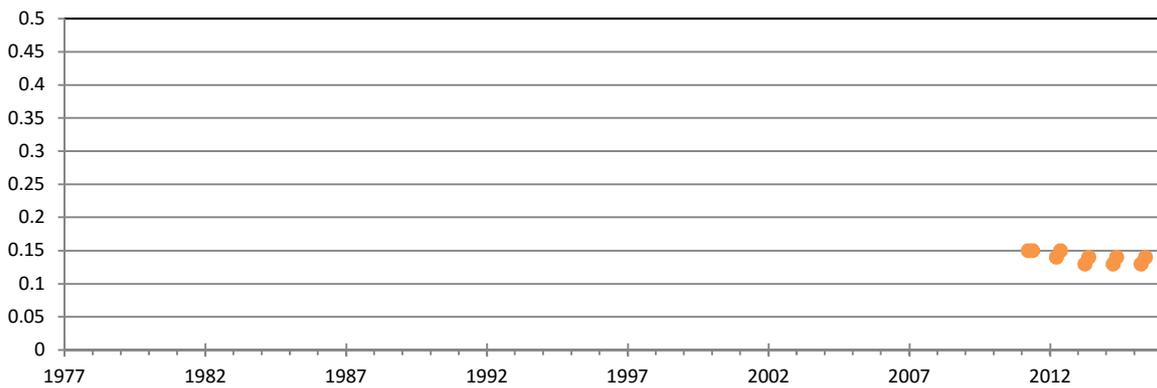
Depth (mLD)



pH



Salinity (ppt)



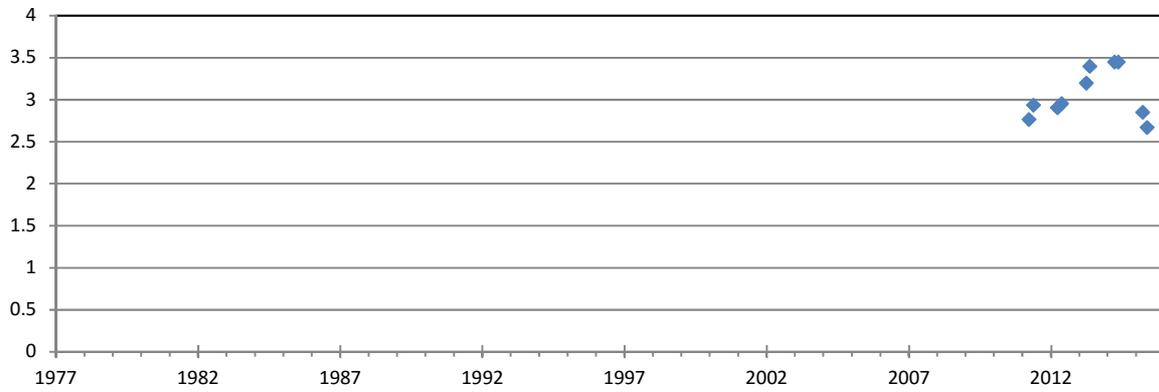
**Notes:**

1. Year labels are positioned at 1<sup>st</sup> July each year.
2. Data are from September and November routine monitoring periods only.

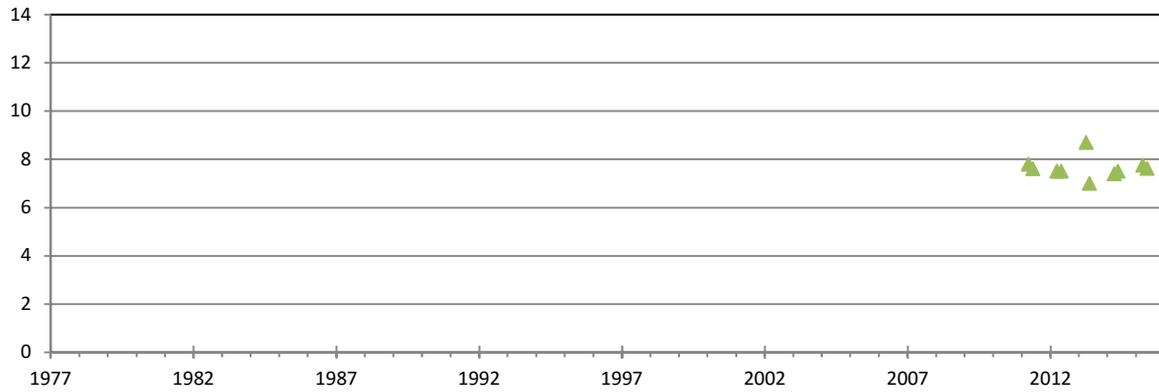
Yeagarup is in the Donnelly District (headquartered in Pemberton) of the Warren DPaW Region.

## YEAGARUP SOUTH

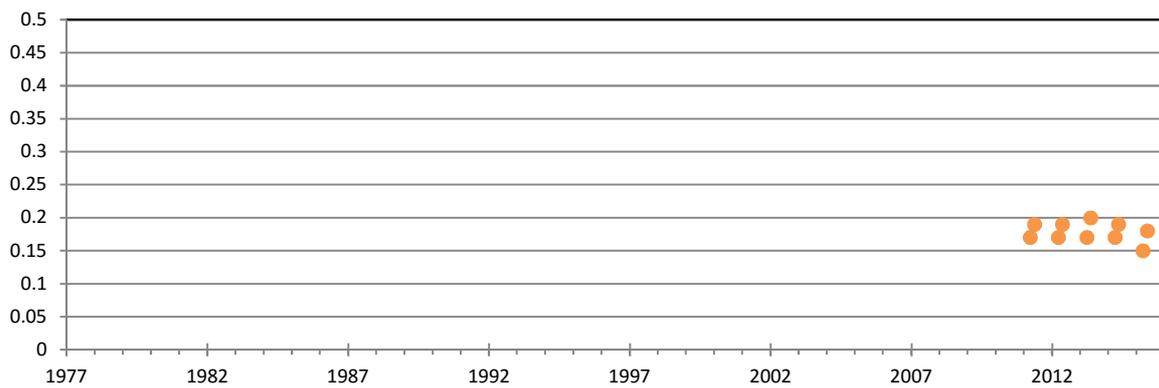
Depth (mLD)



pH



Salinity (ppt)



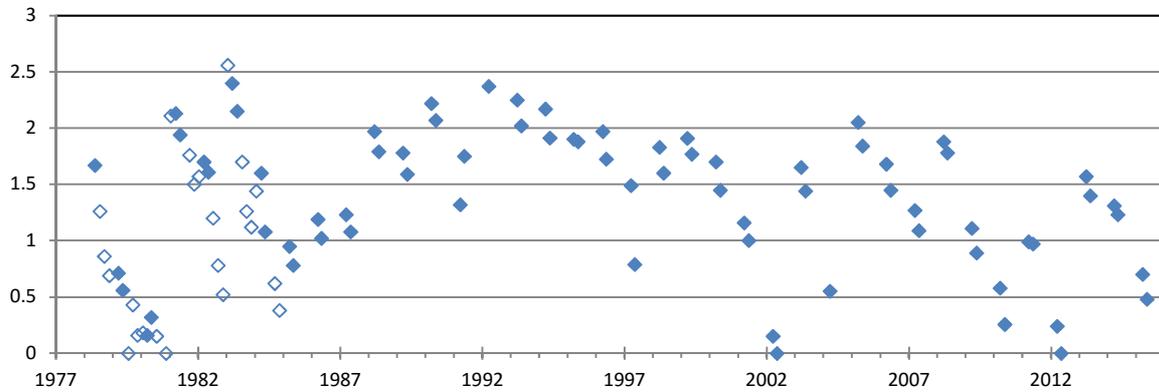
**Notes:**

1. Year labels are positioned at 1<sup>st</sup> July each year.
2. Data are from September and November routine monitoring periods only.

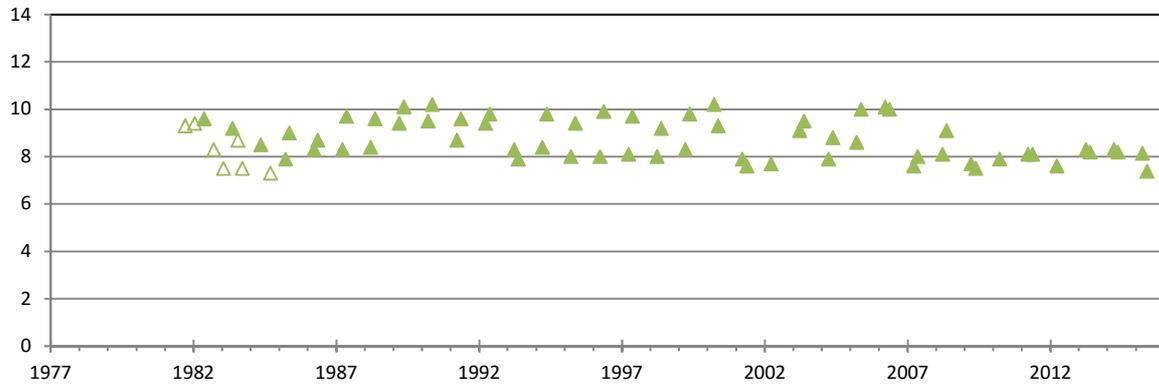
Yeagarup South is in the Donnelly District (headquartered in Pemberton) of the Warren DPaW Region.

## YEALERING

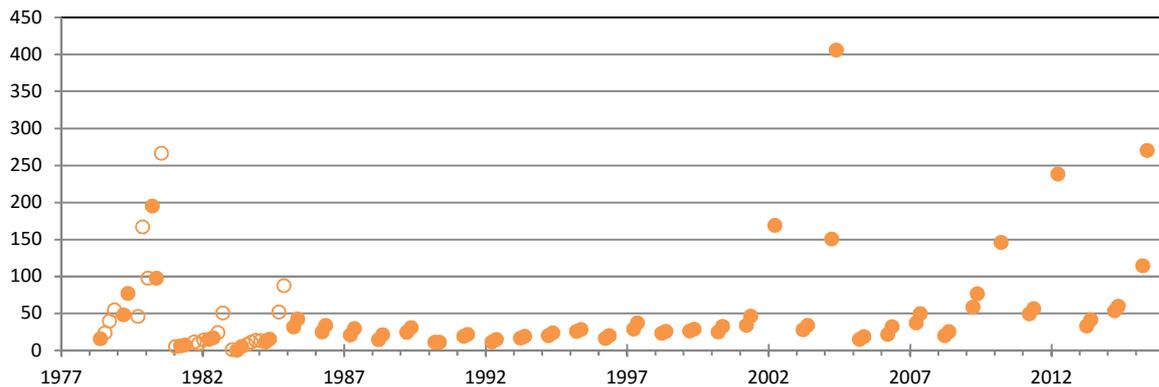
**Depth (mLD)**



**pH**



**Salinity (ppt)**



**Notes:**

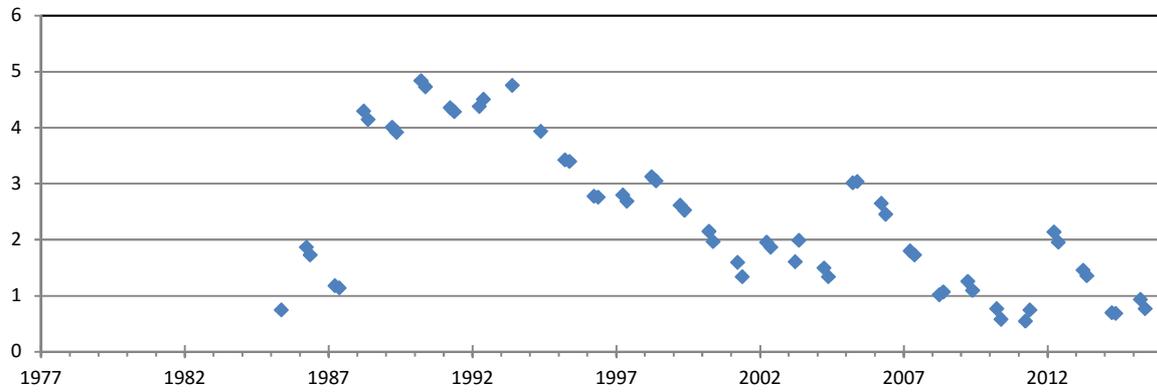
1. Year labels are positioned at 1<sup>st</sup> July each year.
2. Data are from Sept and Nov (filled symbols) and Jan, Mar, May & July (empty symbols) routine monitoring periods only.

Yealering is a component of the 'Yealering Lakes System', which is listed in the 'Directory of Important Wetlands in Australia'.

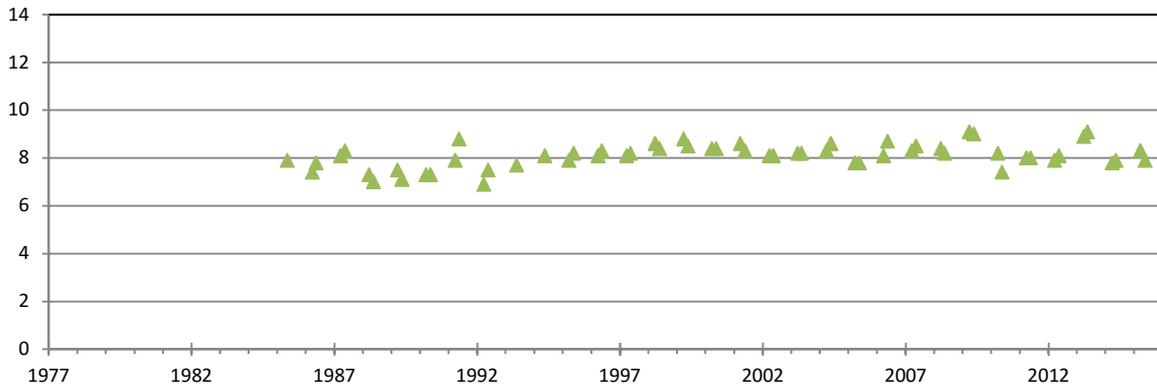
Yealering is in the Southern Wheatbelt geographical area (headquartered in Narrogin) of the Wheatbelt DPaW Region.

# YELLILUP

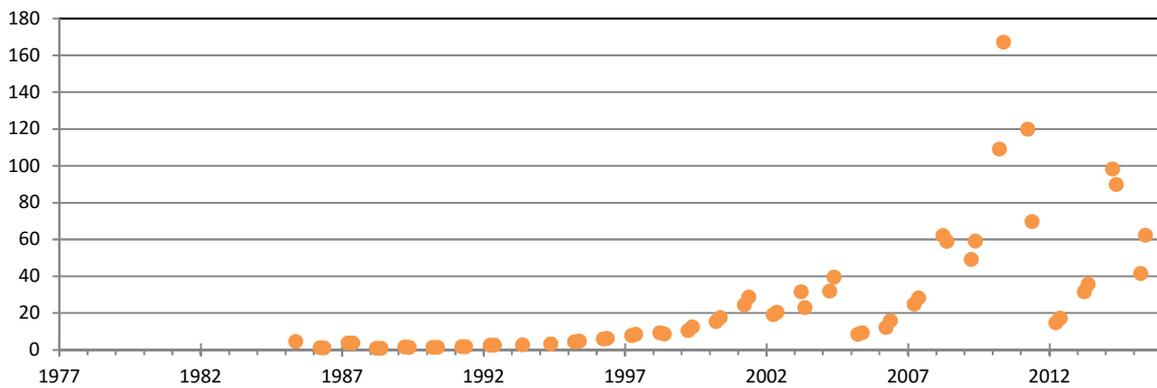
Depth (mLD)



pH



Salinity (ppt)



**Notes:**

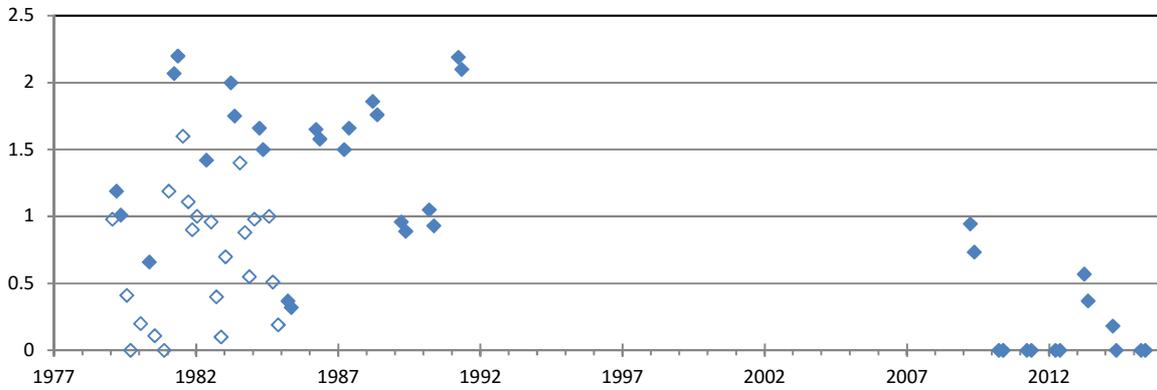
1. Year labels are positioned at 1<sup>st</sup> July each year.
2. Data are from September and November routine monitoring periods only.

Yellilup Lake is a component of the 'Yellilup Yate Swamp System', which is listed in the 'Directory of Important Wetlands in Australia'.

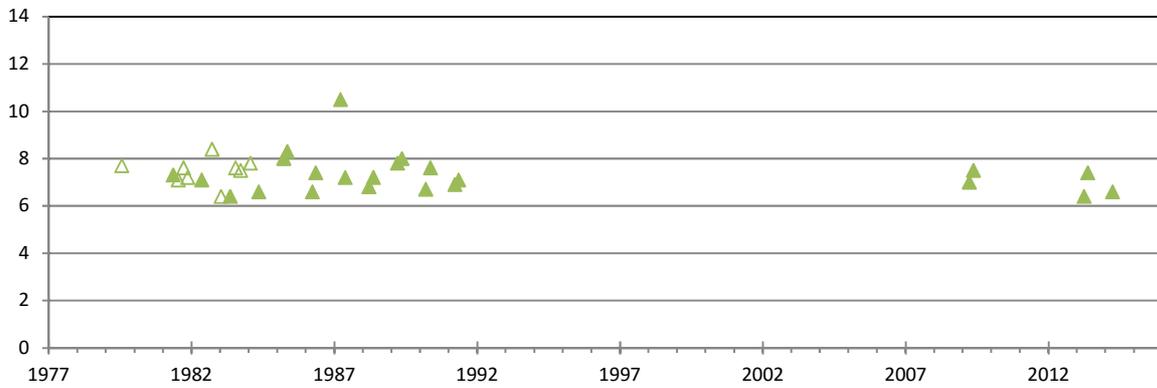
Yellilup is in the Albany District of the South Coast DPaW Region

# YURINE

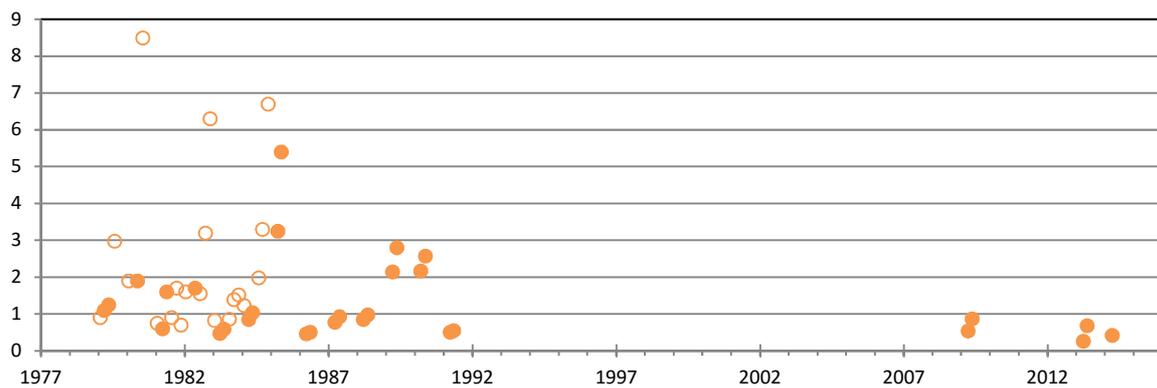
Depth (mLD)



pH



Salinity (ppt)



**Notes:**

1. Year labels are positioned at 1<sup>st</sup> July each year.
2. Data are from Sept and Nov (filled symbols) and Jan, Mar, May & July (empty symbols) routine monitoring periods only.

Yurine is in the Swan Coastal District of the Swan DPaW Region